

# WSU LAYTON TLC BLDG. UPGRADE

## HVAC UPGRADE DFCM PROJECT NO. 07053810

915 W. GORDON AVENUE  
LAYTON, UTAH

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E102 - ELECTRICAL ROOF PLAN

#### DFCM DESIGN AND CODE CRITERIA

(Fee A.E: Attach and fill in applicable data for each drawing submittal)

Applicable Codes: 

International Building Code	Year 2006	International Mechanical Code	Year 2006
Planning & Design Criteria to Prevent Architectural Barriers for the Aged and the Physically Handicapped.		International Plumbing Code	2006
		Ashrae/IES Energy Code	2004
		National Electrical Code	2004

A. Occupancy and Group : B / S-1

Change in Use : Yes \_\_\_\_\_ No ☒ Mixed Occupancy : Yes \_\_\_\_\_ No ☒

B. Type of Construction (Circle) 

I	II	III	IV	V	V
F.R.	F.R.	1 HR.	B	1 HR.	N
N.A.					

C. Location on Property : F.R. Ext. Walls (Hrs.): N.R. Ext. Wall Opening(s) Protection (Hrs.) N.R. Each Occupancy

D. Occupancy separation required (Hrs.): \_\_\_\_\_  
Sprinklered: Indicate Yes or No \_\_\_\_\_

Stories : 1 or multiple

a. Actual Area<sup>2</sup>(ft ) EXISTING \_\_\_\_\_  
b. Basic allowable area : \_\_\_\_\_  
c. Allowable Area Increase due to side yards: N \_\_\_\_\_  
% Area (ft ) \_\_\_\_\_  
N.A. \_\_\_\_\_

d. Side yard area increase (ft ): N.A. \_\_\_\_\_  
Accumulative sub-total (b=d): \_\_\_\_\_  
Sprinkler: area increase (x3 single) \_\_\_\_\_  
(x 2 multi) \_\_\_\_\_

e. Total Allowable Area for a single story: N.A. \_\_\_\_\_  
x 2 for multi-story building: \_\_\_\_\_  
f. Ratio = a/s \_\_\_\_\_  
(Actual divided by allowable)

E. Fire-Resistive Requirements (Hrs.): (1 Hr., 2Hr., 3Hr., 4Hr., N. H.T.)  
N.A. \_\_\_\_\_  
Exterior Bearing Walls: \_\_\_\_\_ Floors - Ceiling Floors \_\_\_\_\_  
Interior Bearing Walls: \_\_\_\_\_ Roofs - Ceiling Roofs \_\_\_\_\_  
Exterior Non-bearing Walls: \_\_\_\_\_ Exterior Doors and Windows \_\_\_\_\_  
Structural Frame: \_\_\_\_\_ Shaft Enclosures \_\_\_\_\_  
Partitions - Permanent: \_\_\_\_\_  
(OCCUPANCY SEPARATION - N.A.)



State of Utah—Department of Administrative Services

### DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT

4110 State Office Building / Salt Lake City, Utah 84114 / 538-3018

#### MECHANICAL ENGINEER

WHW ENGINEERING, INC.  
1354 EAST 3300 SOUTH  
SUITE 200

SALT LAKE CITY, UTAH 84106  
PHONE: (801) 466-4021 FAX: (801) 466-8536



#### WHW

#### ENGINEERING INC.

PROFESSIONAL MECHANICAL ENGINEERING

1354 East 3300 South Suite 200

SALT LAKE CITY, UTAH 84106

(801)466-4021, FAX: 466-8536

EMAIL: excellence@whw-engineering.com

#### ELECTRICAL ENGINEER

ECE ENGINEERING

939 SOUTH WEST TEMPLE  
SALT LAKE CITY, UTAH 84101

PHONE: (801) 521-8007 FAX: (801) 521-8057

#### STRUCTURAL ENGINEER

WCA ENGINEERING

442 NORTH MAIN STREET, SUITE 200  
BOUNTIFUL, UTAH 84010

PHONE: (801) 298-1118 FAX: (801) 298-1122

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D

C

B

A

1

BASIS OF DESIGN

1. BUILDING CODE	2006 IBC
2. OCCUPANCY CATEGORY	II
3. GRAVITY DESIGN:	
DEAD LOADS	
Roofs	20 psf
SNOW LOADS	
Snow load on ground,	Pg .... 42.8 psf
Snow load on flat roof,	Pf .... 30 psf
Exposure factor:	Ce .... 1.0
Importance factor:	Is .... 1.0
Thermal factor:	Ct .... 1.0
4. WIND DESIGN:	
Basic wind speed	90 mph
Importance factor:	Iw .... 1.0
Exposure	D
5. SEISMIC DESIGN:	
Importance factor:	Ie .... 1.0
Mapped Spectral response accelerations:	
Ss & S1	1.25 & 0.53
Site class	D
Spectral response coefficients:	
Sds & SD1	0.83 & 0.53
Seismic Design Category	D
Basic Seismic-Force-Resisting System:	
Bearing wall systems, Special reinforced masonry shear walls	
Design Base Shear	.12W Kips WSD
Seismic response coefficient:	Cs .... 0.12
Response modification factor:	R .... 5
Analysis procedure:	EQUIVALENT LATERAL FORCE
6. SOILS:	
Soil bearing pressure	1500 psf
Lateral earth pressure	45 psf
Minimum frost cover	30 inches
7. ABBREVIATIONS:	
ARCH = Architect	
EOR = Engineer of record. See professional stamp this page.	
UNO = Unless noted otherwise	
(E) = Existing condition	
(N) = New construction	

GENERAL

- THE GENERAL CONTRACTOR SHALL:
  - Understand the contract documents and insure that subcontractors understand their portion of the work. DO NOT make any material or Structural design changes without the approval of the Arch/EOR.
  - Verifies site conditions and dimensions at the site. If they differ from the contract documents, notify the Arch/EOR prior to fabrication/construction of affected elements. Existing condition information on the drawings is based on best knowledge acquired during the design phase and may differ from actual conditions. Affected details may require redesign.
  - Be responsible for identifying and supplying the materials, methods, connections and other information necessary for the proper and efficient construction of the project.
  - Report to the Arch/EOR modifications made to the structure.
  - Be responsible for safety and protection on and around the job site and adjacent properties.
- THE GENERAL CONTRACTOR SHALL COORDINATE:
  - And verify locations, weights and sizes of mechanical units, equipment, etc. prior to the fabrication and erecting of structural supporting elements. Report sizes and locations that differ from those shown on the drawings to the Arch/EOR for review. Additional framing maybe required.
  - Roof, floor, and wall openings required for mechanical, etc. which are not shown on the structural drawings with the Arch/EOR.
  - Any structural situation not covered by the drawings with the Arch/EOR.
  - Doors, windows, walls, elevations, slopes, stairs, curbs, drains, recesses, depressions, railings, waterproofing, finishes, chamfers, kerfs, pads, landscape walls, trenches in slabs, etc. with the structural work.
  - Inspections, testing, and structural observations as work proceeds. Notify the EOR 48 hours prior to any required structural observations.
- CONTRACT DOCUMENTS & DRAWINGS:
  - These structural notes complement the specifications and the drawings.
  - Specific details, sections and notes shown on the drawings govern over these general notes and typical details.
  - Contract documents take precedence over shop drawings, UNO.
  - Apply typical or similar details, sections and notes to similar situations on the drawings where specific details are not referenced.
  - These drawings and specifications do not describe all materials, methods, connections and other information necessary for the proper and efficient construction of the Project.
  - Drawings and details have been prepared to visually represent information provided in scaled form. However, DO NOT scale plans or details for dimensional information.
  - Refer to architectural drawings for dimensions.
- BUILDING CODE COMPLIANCE:

Construction, inspection, materials, testing, and workmanship shall conform to the requirements of the governing building code.
- CONSTRUCTION SEQUENCE, SHORING, AND BRACING REQUIREMENTS:

The general contractor is responsible for the method, means, and sequence of structural erection, UNO. He shall provide adequate temporary shoring or bracing for all structural elements until the entire structural system is completed. Design of shoring and bracing is by others at no additional cost to the owner.
- OMISSIONS, CONFLICTS & DISCREPANCIES:
  - Bring omissions, conflicts or discrepancies between the elements of the contract documents to the attention of the Arch/EOR before proceeding with work involved. Contractor shall notify EOR of such error, omission or defect in writing.
  - In case of conflicts or discrepancies, follow the most stringent requirements as directed by the Arch/EOR.
- MISCELLANEOUS:
  - During and after construction, builder and owner shall keep loads on the structure within the limits of this design. See Basis of Design.
  - Site observations by WCA's field representative shall neither be construed as inspection nor approval of construction.
- SUBMITTALS:
  - Make submittals in a timely manner. WCA's review is for general compliance only and is not intended as approval. Contractor is responsible for verifying sizes, dimensions and elevations on submittals as related to the contract documents.
  - Submit the following items for review prior to proceeding with the work:

Shop Drawings: Structural steel  
Roof, floor and wall openings not shown on the drawings.  
Welding procedures and certifications.
  - Allow two weeks for the review of submittals by the EOR.
  - Have EOR approved shop drawings & materials on site before construction of those components begin.
  - Substitutions are not allowed unless approved by the EOR. Submit requests for structural substitutions to the Arch/EOR in writing.

2

2

3

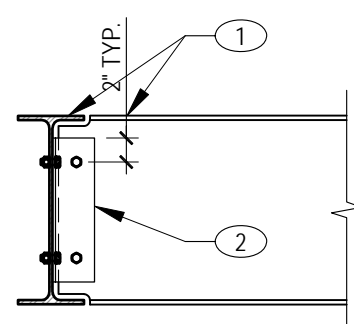
SPECIAL INSPECTION AND TESTING

- INSPECTIONS: Provide special inspection by an independent agency in accordance with IBC Chapter 17 and as outlined below:

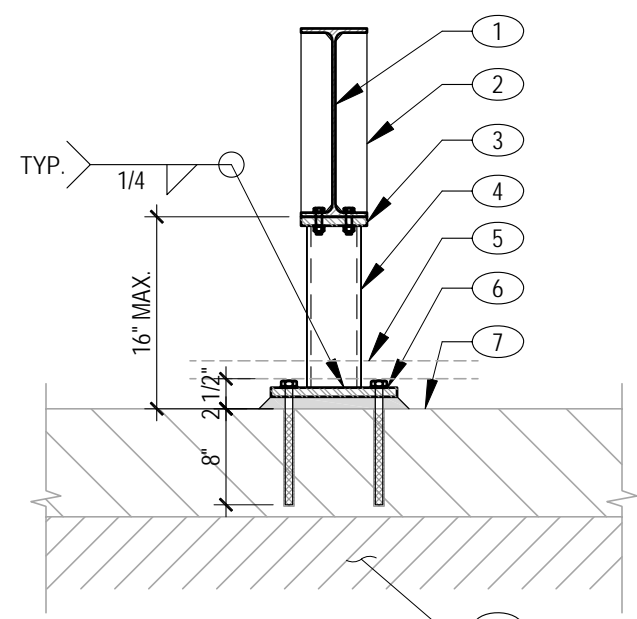
Anchor bolts and concrete & masonry embedments.  
Steel to steel bolting: all high strength bolts.  
Welding: all field welds. Inspector shall be AWS-QC1 certified.
- THE CONTRACTOR SHALL:
  - Coordinate testing. DO NOT proceed with subsequent work until inspections and testing has been approved.
  - Copy inspection reports/testing results to the Arch/EOR and owner before work proceeds.
  - Correct deficient work at no additional cost to the owner.

STRUCTURAL STEEL

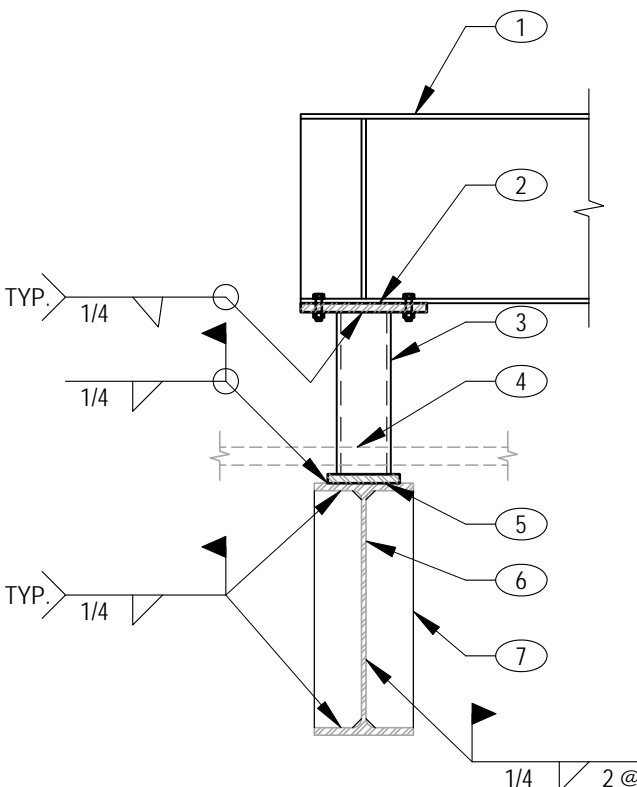
- CODES AND STANDARDS: Comply with:
  - AISC "Specification for Structural Steel Buildings & Commentary".
  - AISC "Code of Standard Practice" 13th Ed. excluding sections 7.5.4, and 7.13.3.
  - AWS "Structural Welding Code", exclude items conflicting with AISC.
- MATERIALS SHALL CONFORM AS FOLLOWS:
  - Wide Flange beams: ASTM A992 Fy = 50 ksi.
  - Other shapes & plates: ASTM A53 Fy = 36 ksi.
  - Hollow Structural Sections: ASTM A500, Fy = 46 ksi, Gr. B.
  - Pipe: ASTM A53, Fy = 35 ksi, Gr. B.
  - High strength bolts: ASTM A325.
  - Anchor rods: ASTM F1554 Fy = 36 ksi.
  - Other bolts: ASTM A307 or better.
- CONSTRUCTION:
  - Fabricate in an approved fabricator's shop.
  - Fabricate beams with incidental camber up, UNO.
  - Use 6000 psi (minimum at 28-day) non-shrink liquid grout beneath bearing plates. Place grout per manufacturer's recommendations prior to loading member.
- BOLTED CONNECTIONS:
  - Use 3/4" diameter bolts in Std. holes (bolt diameter + 1/16"), UNO.
  - Steel-to-steel connections: Use ASTM A325 type "N" connections, UNO.
  - Other connections: Use ASTM A307 bolts or better except for anchor rods, UNO.
  - Use hardened washers beneath the turned element of the bolt or nut. Use beveled hardened washers where the outer face of bolted parts has a slope greater than one in twenty with respect to the plane normal to the bolts axis. At oversized holes, use hardened washers or plates at least 5/16" thick conforming to ASTM F436.
  - Tighten bolts until all plies of the joint are in firm contact. Snug tight condition, UNO.
  - Enlarge bolt holes by reaming. DO NOT torch cut.
- WELDED CONNECTIONS:
  - Perform welding and cutting by AWS certified welders in accordance with AWS/AWS D1.1 (latest edition).
  - For typical shop & field welds, use filler metals with nominal 70 ksi tensile strength having:
    - Matching material for multiple pass welds.
    - A diffusible hydrogen limit of H16 or less.
    - A CVN toughness of 20 ft-lbs at 0 deg. F.
  - Use pre-qualified procedures.
  - Weld intersecting steel shapes together, which are not connected with bolts, with all-around fillet welds, UNO.
  - Wherever possible use shop welds. The contractor shall coordinate field and shop welds between shop fabrication and the steel erector.
  - Remove slag from welds.



B4  
SC101  
NO SCALE



B4  
SC101  
NO SCALE



B4  
SC101  
NO SCALE

4

4

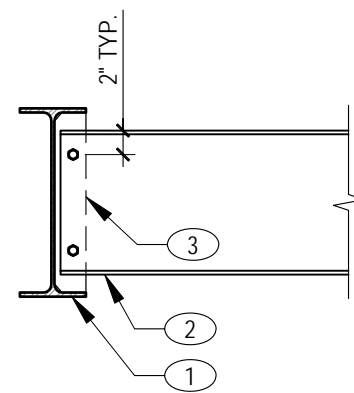
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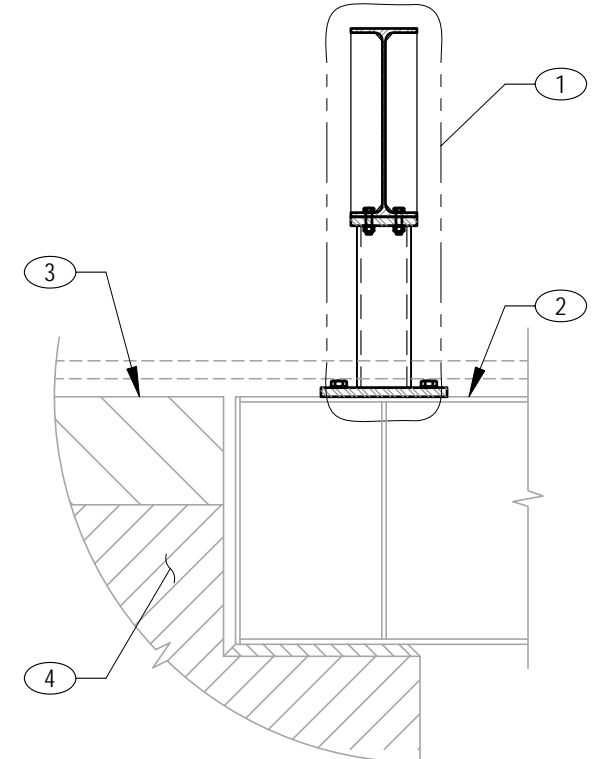
WCA  
Structural  
Engineering Inc.  
442 North Main Street, Suite 200  
Bountiful, Utah 84010  
e-mail: cliff.cole@wcaeng.com  
(801) 298-1118, Office 298-1122 Fax

KEYNOTES:

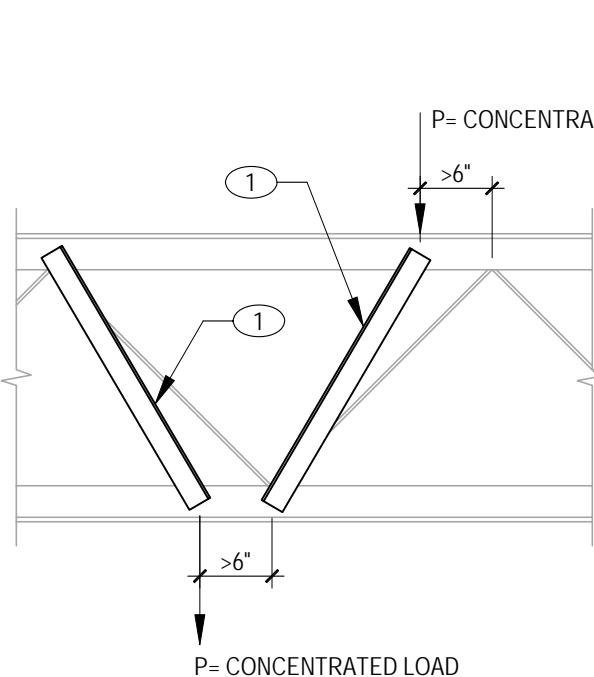
- STEEL BEAM, SEE PLAN
- LL 3 1/2" x 3 1/2" x 1/4" BY 12" W/ (2) 3/4"Ø A325 BOLTS, EACH LEG



C5  
SC101  
NO SCALE



C5  
SC101  
NO SCALE



C5  
SC101  
NO SCALE

KEYNOTES:

- STEEL BEAM, SEE PLAN
- STEEL CHANNEL, SEE PLAN
- 5/16" STIFFENER PLATE W/ (2) 3/4"Ø A325 THRU BOLTS

KEYNOTES:

- SEE DETAIL B4/SG101
- (E) W21x44 bf = 6 1/2" W/ (E) WEB STIFFENERS
- (E) CONCRETE CAP, 7 1/2" WIDE
- (E) ATLAS BRICK WALL

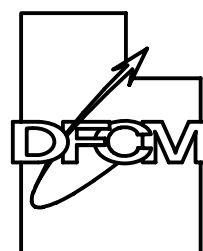
KEYNOTES:

- STEEL ROOF JOIST, SEE PLAN
- ADDITIONAL L2" x 2" x 3/16" DIAGONAL WEB MEMBER AT EACH SIDE OF JOIST.

NOTES:

- WHEN CONCENTRATED LOADS ON JOISTS ARE LOCATED MORE THAN 6" FROM THE PANEL POINTS, ADDITIONAL WEB MEMBERS (ONE EACH SIDE OF JOIST) SHALL BE FIELD WELDED FROM THE POINT OF LOAD TO THE NEAREST PANEL POINT ON THE OPPOSITE CHORD.

State of Utah  
Department of Administrative Services



Division of Facilities  
Construction & Management  
4110 State Office Building  
Salt Lake City, Utah 84114  
Phone: (801) 538 - 3018  
Fax: (801) 538 - 3267

Internet: <http://dfcm.utah.gov>

BUILDING NAME:

WSU LAYTON TLC  
BUILDING UPGRADE  
915 WEST GORDAN AVE.  
LAYTON, UT

PROJECT TITLE:

WEBER STATE  
UNIVERSITY TRAINING  
& LEARNING CENTER,  
HVAC UPGRADES  
DESIGN

MARK	DATE	DESCRIPTION
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ISSUE TYPE: BID SET

ISSUE DATE: 15 JUNE 2007

DFCM PROJECT NO: 07053810

CAD PROJECT NO: 07086

CAD DWG FILE: 07086\_GSN\_DETAILS.dwg

DRAWN BY: NT

CHK'D BY: KW

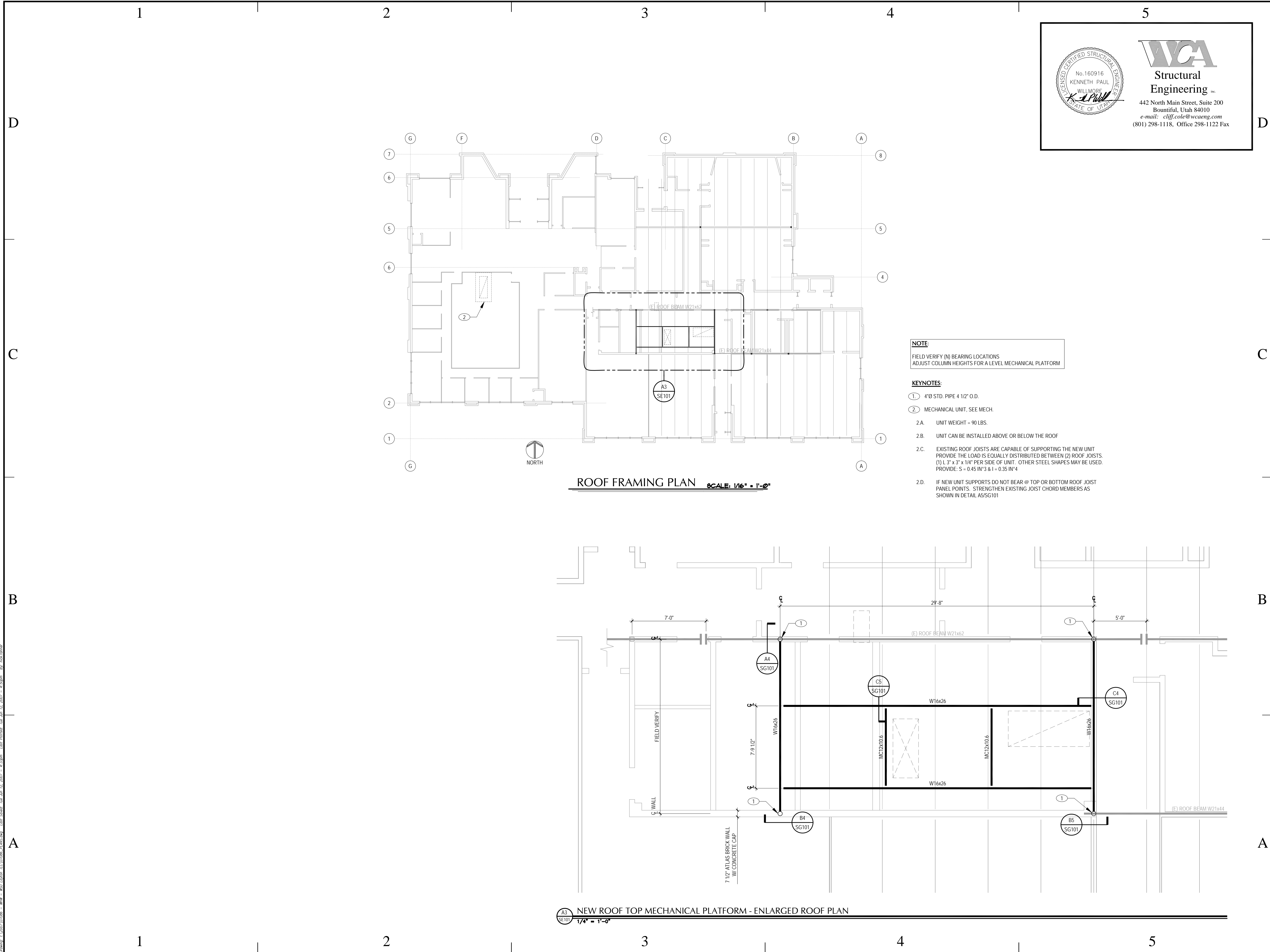
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SHEET TITLE  
GENERAL NOTES  
& FRAMING DETAILS

SHEET NUMBER

SG101

SHEET 1 OF 2



**Structural Engineering** inc.  
442 North Main Street, Suite 200  
Bountiful, Utah 84010  
e-mail: [cliff.cole@wcaeng.com](mailto:cliff.cole@wcaeng.com)  
(801) 298-1118, Office 298-1122 Fax

**State of Utah**  
Department of Administrative Services

Division of Facilities  
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4110 State Office Building  
Salt Lake City, Utah 84114  
Phone: (801) 538 - 3018  
Fax: (801) 538 - 3267

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BUILDING NAME:

**WSU LAYTON TLC  
BUILDING UPGRADE  
915 WEST GORDAN AVE.  
LAYTON, UT**

PROJECT TITLE:

**WEBER STATE  
UNIVERSITY TRAINING  
& LEARNING CENTER,  
HVAC UPGRADES  
DESIGN**

MARK	DATE	DESCRIPTION
ISSUE TYPE: BID SET		
ISSUE DATE: 15 JUNE 2007		
DFCM PROJECT NO: 07053810		
CAD PROJECT NO: 07086		
CAD DWG FILE: 07086_PLANS.dwg		
DRAWN BY: NT		
CHK'D BY: KW		
COPYRIGHT: STATE OF UTAH		
SHEET TITLE		
<b>FRAMING PLAN</b>		
SHEET NUMBER		
<b>SE101</b>		
SHEET 2 OF 2		

GENERAL NOTES:	
G-1	MECHANICAL INFORMATION IS NOT LIMITED TO THE MECHANICAL DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR INFORMATION ON ALL OTHER CONSTRUCTION DOCUMENTS INCLUDING DRAWINGS BY OTHER DISCIPLINES AND SPECIFICATIONS.  A - EACH DRAWING SHEET AND THE SPECIFICATIONS HAVE BEEN PREPARED TO SUPPLEMENT EACH OTHER AND THEY SHALL BE INTERPRETED AS AN INTEGRAL UNIT WITH ITEMS SHOWN AND NOTED ON ONE AND NOT THE OTHER BEING FURNISHED AND INSTALLED AS THOUGH SHOWN AND CALLED OUT IN ALL PLACES. ITEMS IN SPECIFICATIONS OR DRAWINGS LISTED WHICH ARE DIFFERING IN EFFICIENCY OR QUALITY SHALL BE HELD TO THE GREATEST OF: EFFICIENCY, QUALITY OR GOVERNING CODE.  B - THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE INSTALLATION OF THE SYSTEMS ACCORDING TO THE TRUE INTENT AND MEANING OF THE CONTRACT DOCUMENTS.  C - THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT WITH PROPER SERVICE ACCESS AND CLEARANCES ACCORDING TO MANUFACTURERS RECOMMENDATIONS. THE CONTRACTOR SHALL REVIEW SUPPLIERS BID PACKAGES FOR COMPLETENESS AND COMPLIANCE TO THE SPECIFICATIONS, SCHEDULES, AND DESIGN INTENT (ALL EQUIPMENT AND METHODS). THE CONTRACTOR SHALL REMOVE AND REINSTALL CORRECTLY AT HIS OWN EXPENSE ANY EQUIPMENT NOT IN COMPLIANCE.  D - THE CONTRACTOR SHALL CONSULT MANUFACTURERS INSTALLATION INSTRUCTIONS FOR SIZES, METHODS, ACCESSORIES, AND CLEARANCES IN SPACE AVAILABLE PRIOR TO BIDDING PROJECT.  E - ANYTHING NOT CLEAR OR IN CONFLICT WILL BE EXPLAINED BY MAKING APPLICATION TO THE ENGINEER IN WRITING.
G-2	ANY AND ALL ALTERATIONS TO THE SYSTEM SHOWN SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR. ARCHITECT SHALL BE NOTIFIED IN WRITING PRIOR TO CHANGES.
G-3	CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATIONS.
G-4	THE WORKING DRAWINGS ARE DIAGRAMMATIC. THEY DO NOT SHOW EVERY OFFSET, BEND, OR ELBOW NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. ALL LOCATIONS FOR MECHANICAL EQUIPMENT SHALL BE FIELD VERIFIED AND COORDINATED WITH ALL DRAWINGS. THE CONTRACTOR SHALL PROVIDE OR COORDINATE WITH THE GENERAL CONTRACTOR PROVISIONS FOR BLOCKOUTS OR CORE DRILLS THROUGH STRUCTURE.
G-5	THE INSTRUCTION TO "PROVIDE" ALSO INCLUDES INSTALLATION.
G-6	MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL SMOKE AND FIRE DAMPERS AS REQUIRED BY LOCAL CODES AND AUTHORITIES.
G-7	SHEET METAL DUCT SIZES SHOWN ON DRAWINGS ARE FREE AREA DIMENSIONS.
G-8	PROVIDE AND INSTALL BALANCING DAMPERS IN ALL SUPPLY AND EXHAUST AIR BRANCH DUCTS. BALANCE TO CFM SHOWN ON PLAN.
G-9	SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF DIFFUSERS AND GRILLES.
G-10	PROVIDE TURNING VANES IN ALL ELBOWS OF RECTANGULAR DUCT.
G-11	THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY IN HANDLING AND DISPOSING OF REFRIGERANTS, OILS, ETC. ALL SUCH MATERIALS SHALL BE HANDLED, DISPOSED, AND USED IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL LAWS.
G-12	THE MECHANICAL CONTRACTOR SHALL VERIFY MOTOR VOLTAGES WITH THE ELECTRICAL DRAWING BEFORE ORDERING MOTORIZED EQUIPMENT AND CONTROLS.
G-13	C.F.M. LISTED IS ACTUAL AIR.
G-14	SUPPLIERS SHALL REVIEW ALL DRAWINGS AND THE SPECIFICATIONS PRIOR TO SUBMITTING PRICES TO THE CONTRACTOR. ALL QUESTIONS AND DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO BIDDING.
G-15	CONTRACTOR SHALL THOROUGHLY REVIEW AND SIGN SUBMITTALS FOR COMPLETENESS AND COMPLIANCE TO THE SPECIFICATIONS PRIOR TO ENGINEERS REVIEW. SUPPLIERS SHALL HIGHLIGHT OR MARK ALL INFORMATION REQUIRED TO SHOW COMPLIANCE TO THE SPECIFICATIONS. ALL REQUESTED EXCEPTIONS TO THE SPECIFICATIONS, OR SCHEDULES SHALL BE CLEARLY NOTED AND EXPLAINED. SUBMITTAL REVIEW AND ACCEPTANCE IS FOR DESIGN CONCEPT ONLY, AND DOES NOT AT ANY TIME RELIEVE THE CONTRACTOR OF RESPONSIBILITY TO MEET SPECIFICATIONS, CAPACITIES, OR DESIGN INTENT.
G-16	ALL MECHANICAL SHALL BE INSTALLED AND CONFORM TO THE 2006 EDITION OF THE IMC WITH UTAH ANNOTATIONS AND LOCAL AUTHORITY REQUIREMENTS.
G-17	THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE DRAINING DOWN AND RE-FILLING OF ALL SYSTEMS NECESSARY TO COMPLETE THE WORK OUTLINED BY THIS PROJECT. THIS INCLUDES PROVIDING THE REQUIRED CHEMICAL TREATMENT WHEN RE-FILLING THE SYSTEM.

SYMBOL	ABR.	DESCRIPTION
GENERAL TERMINOLOGY		
		SECTION LETTER DESIGNATION
		DETAIL NUMBER DESIGNATION CORRESPONDING WITH GRID LOCATION
		MECHANICAL EQUIPMENT DESIGNATION
		EQUIPMENT ITEM DESIGNATION
		REGISTER, GRILL OR DIFFUSER DESIGNATION WITH BALANCING CFM LISTED BELOW
		GRILLE, OR LOUVER DESIGNATION WHERE BALANCING NOT REQUIRE
		REVISION DESIGNATOR AND NUMBER
		KEY NOTE DESIGNATOR AND NUMBER
	POC	POINT OF CONNECTION
	POR	POINT OF REMOVAL
	AFF	ABOVE FINISHED FLOOR
	AP	ACCESS PANEL
	EL.	CENTER LINE ELEVATION
	INV. ELEV.	INVERT ELEVATION
	GC	GENERAL CONTRACTOR
	MC	MECHANICAL CONTRACTOR
	CC	CONTROL CONTRACTOR
	EC	ELECTRICAL CONTRACTOR
	FPC	FIRE PROTECTION CONTROL
	NIC	NOT IN CONTRACT
	NTS	NOT TO SCALE
	VCP	VITRIFIED CLAY PIPE
	C	COMMON
	NC	NORMALLY CLOSED
	NO	NORMALLY OPEN

SYMBOL	ABR.	DESCRIPTION
AIR SIDE		
		EXISTING AIR DUCT TO BE REMOVED
		EXISTING AIR DUCT TO REMAIN
		NEW AIR DUCT
		RECT. TO RECT. AIR DUCT TAKE-OFF
		RECT. TO RND. AIR DUCT TAKE-OFF
		RND. TO RND. AIR DUCT TAKE-OFF
		RECT. TAKE-OFF AT END OF MAIN
		BURIED OR UNDER FLOOR DUCT
		FLEXIBLE AIR DUCT
		LINED DUCT
		VANED ELBOW
		RADIUS ELBOW
		CONCENTRIC DUCT TRANSITION
		ECCENTRIC DUCT TRANSITION
		FLEXIBLE AIR DUCT
		VOLUME DAMPER
		SUPPLY AIR DIFFUSER
		RETURN AIR, FRESH AIR, AND TRANSFER AIR
		CEILING MOUNTED EXHAUST FAN OR EXHAUST GRILLE
		RETURN OR OUTSIDE AIR DUCT UP
		SUPPLY DUCT UP
		EXHAUST AIR INTAKE UP
		RETURN OR OUTSIDE AIR DUCT DOWN
		SUPPLY DUCT DOWN
		EXHAUST DUCT DOWN
		ROUND DUCT UP
		LOWER DUCT DOWN
		FLEXIBLE DUCT CONNECTION
		LOWER DUCT DOWN
		FLEXIBLE DUCT CONNECTION
		PARALLEL BLADE DAMPER
		OPPOSED BLADE DAMPER
		HUMIDIFIER
		AIRFLOW MEASURING STATION
		FILTER BANK
		COIL
	AP	ACCESS PANEL
		EXISTING EQUIPMENT TO BE REMOVED
		EXISTING EQUIPMENT TO REMAIN
		NEW EQUIPMENT
	MVD	MOTORIZED VOLUME DAMPER
	BD	BACKDRAFT DAMPER
	FD	FIRE DAMPER
	RD	RADIATION TYPE FIRE DAMPER
	SD	SMOKE DAMPER
	FS	FIRE & SMOKE DAMPER
	T-STAT	WALL MOUNTED THERMOSTAT
		WALL MOUNTED TEMP. SENSOR
	H-STAT	WALL MOUNTED HUMIDISTAT
	F-STAT	WALL MOUNTED FIRESTAT
	SA	SUPPLY AIR
	RA	RETURN AIR
	EA	EXHAUST AIR
	OA	OUTSIDE AIR
	MA	MIXED AIR
	FA	FRESH AIR
	RF	RELIEF AIR

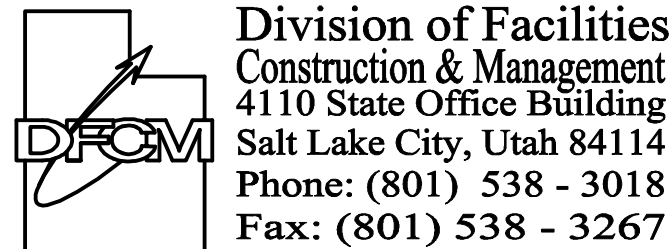
## MECHANICAL LEGEND

SYMBOL	ABR.	DESCRIPTION
WET SIDE		
		PUMP
	PSD	PUMP SUCTION DIFFUSER
		UNION
		MANUAL ACTUATOR (BALL, BUTTERFLY, NEEDLE, ETC. VALVES)
		MANUAL ACTUATOR (GATE, GLOBE, S&D, OS&Y, ETC. VALVES)
		PNEUMATIC DIAPHRAGM ACTUATOR
		ELECTRIC MOTOR ACTUATOR
		SOLENOID ACTUATOR
		THREADED OR SWEAT VALVE CONNECTION
		FLANGED VALVE CONNECTION
		BUTTERFLY VALVE
		GATE VALVE
		GLOBE VALVE - STRAIGHT PATTERN
		GLOBE VALVE - ANGLE PATTERN
		MOTORIZED 2-WAY CONTROL VALVE
		MOTORIZED 3-WAY CONTROL VALVE
		CHECK VALVE
	PRV	PRESSURE REDUCING VALVE
	PRV	PRESSURE REDUCING VALVE W/ CHECK
	CBV	CIRCUIT BALANCING VALVE
	BV	BALL VALVE
	PRV	PRESSURE RELIEF VALVE
	TRV	THERMAL RELIEF VALVE
	SRV	SAFETY RELIEF VALE
		PLUG VALVE
		NEEDLE VALVE
	TDV	TRIPLE DUTY VALVE
	TDV	TRIPLE DUTY VALVE - ANGLE
	TDV	TRIPLE DUTY VALVE - STRAIGHT
		AUTOMATIC AIR VENT
		MANUAL AIR VENT
		STRAINER
		STRAINER W/ PLUGGED BLOW OFF
	VTI	VENTURI
		PRESSURE GAUGE AND GAUGE COCK - WATER
		PRESSURE GAUGE AND GAUGE COCK - STEAM
		THERMOMETER AND THERMOWELL
		WATER TEMPERATURE SENSOR AND THERMOWELL
		FLOW SWITCH
	PS	PRESSURE SWITCH
	TW	THERMOWELL
		PRESSURE AND TEMPERATURE TAP
		INVERTED BUCKET STEAM TRAP
		THERMOSTATIC STEAM TRAP
		FLOAT & THERMOSTATIC STEAM TRAP
		DIRECTION OF FLOW

SYMBOL	ABR.	DESCRIPTION
WET SIDE CONT		
		PITCH DOWN
		ELBOW UP
		ELBOW DOWN
		TEE UP
		TEE DOWN
		EXISTING PIPING TO BE REMOVED
		EXISTING PIPING TO REMAIN
		NEW PIPING
		PIPE CAP OR PLUG
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		EXPANSION JOINT
		FLEXIBLE CONNECTION
		ANCHOR POINT
	CD	CONDENSATE DRAIN
	G	NATURAL GAS PIPING
	CF	CHEMICAL FEED LINE
	MU	MAKE-UP WATER LINE
	CW	CULINARY COLD WATER
	HW	CULINARY HOT WATER
		RECIRCULATED CULINARY
	DR	EQUIPMENT DRAIN
	HWS	HEATING WATER SUPPLY
	HWR	HEATING WATER RETURN
	CHWS	CHILLED WATER SUPPLY
	CHWR	CHILLED WATER RETURN
	HTWS	HIGH TEMPERATURE HEATING WATER SUPPLY
	HTWR	HIGH TEMPERATURE HEATING WATER RETURN
	LPS	LOW PRESSURE STEAM
	LPR	LOW PRESSURE STEAM
	MPS	MEDIUM PRESSURE STEAM
	MPR	MEDIUM PRESSURE STEAM
	HPS	HIGH PRESSURE STEAM
	HPR	HIGH PRESSURE STEAM
	CS	CONDENSER SUPPLY
	CR	CONDENSER RETURN
	PC	PUMPED CONDENSATE
	L	REFRIGERANT LIQUID
	S	REFRIGERANT SUCTION
	HG	REFRIGERANT HOT GAS
	FOS	FUEL OIL SUPPLY
	FOR	FUEL OIL RETURN
	FOV	FUEL OIL VENT

## State of Utah

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4110 State Office Building  
Salt Lake City, Utah 84114  
Phone: (801) 538 - 3018  
Fax: (801) 538 - 3267

Internet: <http://www.dfcmm.state.ut.us>

## CONSULTANTS



**WHW**  
**ENGINEERING INC.**  
PROFESSIONAL MECHANICAL ENGINEERING  
1504 East 5500 South Suite 200  
SALT LAKE CITY, UTAH 84108  
(801) 466-4021, FAX 466-9536  
EMAIL: [excellence@whw-engineering.com](mailto:excellence@whw-engineering.com)

## PROJECT NAME & ADDRESS

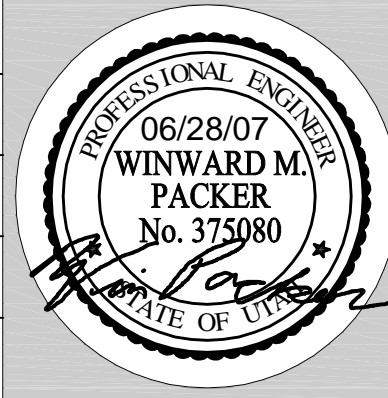
**WEBER STATE UNIVERSITY**  
**TRAINING & LEARNING CENTER,**  
**HVAC UPGRADES DESIGN**

**DFCM No. 07053810**

915 W. Gordon Avenue  
Layton, Utah

MARK	DATE	REVISION

PROJECT MANAGER:	WP
DRAWN BY:	STAFF
CHECKED BY:	SLW
DATE:	06/15/07
WHW JOB NO.:	07021
SHEET TITLE	



**MECHANICAL GENERAL**  
**NOTES AND LEGEND**

SHEET NO.

**MG001**

# SHEET NOTES

## SHEET NOTES:

- ① SEE LARGE SCALE SHEET MD401 FOR THIS AREA.
- ② UNDERFLOOR DUCT SHALL BE ABANDONED IN PLACE. PROVIDE HEAVY GAUGE SHEET METAL CAP BELOW FLOOR GRILLE. EXISTING FLOOR GRILLE SHALL REMAIN AND BE ABANDONED IN PLACE.
- ③ REMOVE EXISTING FURNACE AFTER NEW BOILER AND VAV SYSTEM ARE FUNCTIONING. REMOVE ASSOCIATED FLUE TO CEILING AND CAP BELOW CEILING.
- ④ REMOVE EXISTING COOLING ONLY VAV BOX. PROTECT DUCTWORK FOR RE-CONNECTION TO NEW BOX.
- ⑤ REMOVE EXISTING SUPPLY DUCT AND DIFFUSERS AS SHOWN.
- ⑥ REMOVE EXISTING THERMOSTAT. PROVIDE WALL COVER PLATE WHERE NO NEW THERMOSTAT IS SHOWN ON SHEET ME101.
- ⑦ EXISTING LOW PRESSURE DUCT AND DIFFUSER SHALL REMAIN.
- ⑧ EXISTING MEDIUM PRESSURE DUCT SHALL REMAIN.
- ⑨ REMOVE EXISTING GAS PIPING TO FURNACES. AFTER NEW BOILER AND VAV SYSTEM ARE OPERATING. CAP BRANCH PIPING AT MAIN.
- ⑩ EXISTING GAS METER AND GAS PIPING SHALL REMAIN.

## GENERAL NOTE:

1. ALL WORK DONE OUTSIDE OF MECHANICAL ROOM SHALL BE DONE BETWEEN AUGUST 27, 2007 AND OCTOBER 01, 2007.

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Construction & Management  
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## CONSULTANTS



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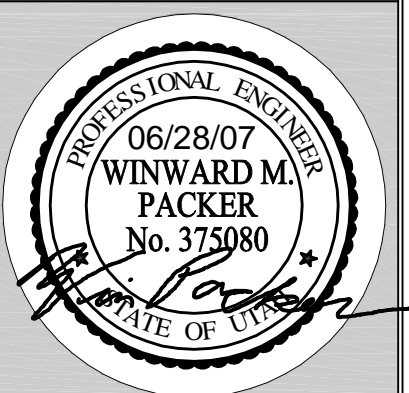
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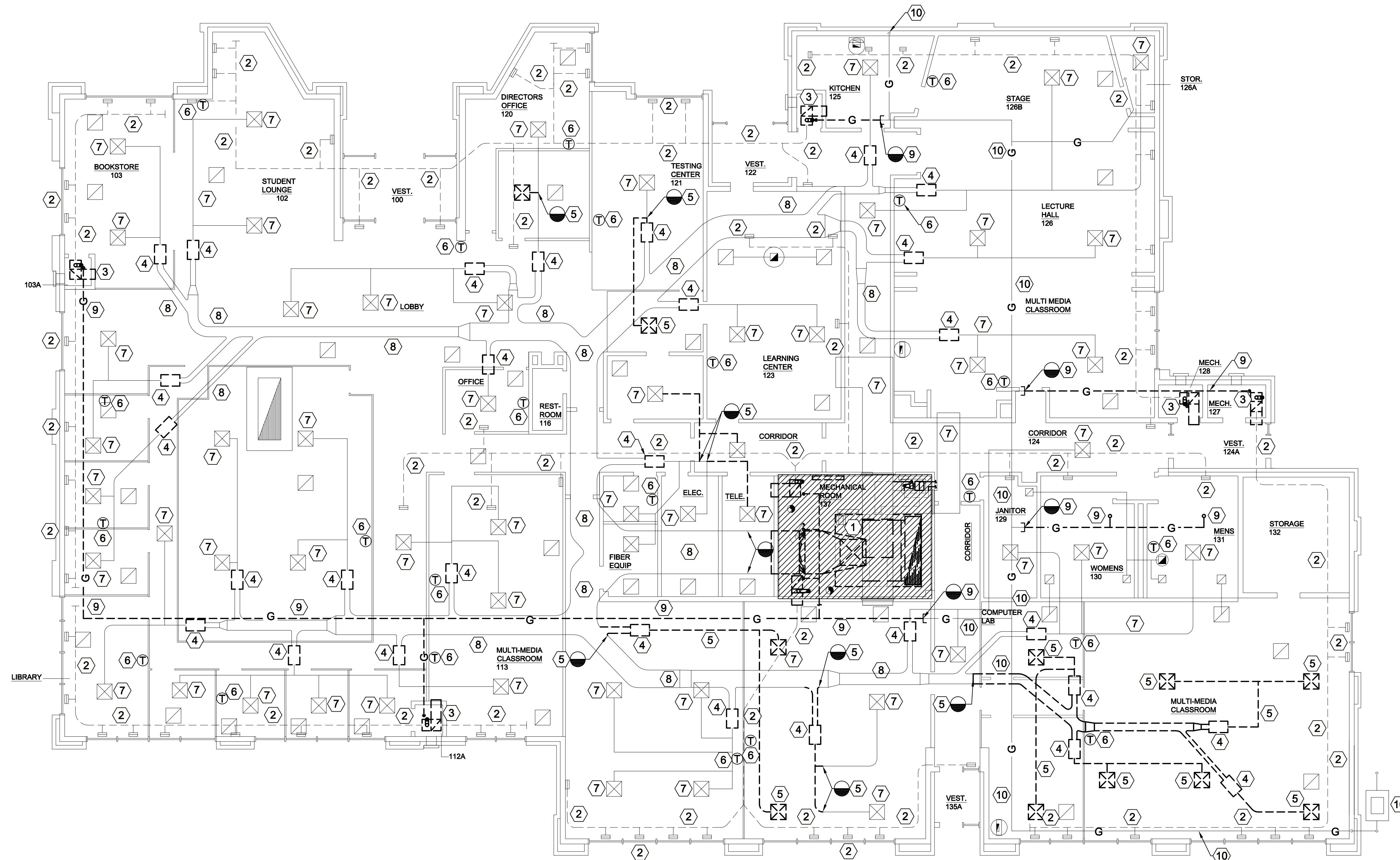
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**MECHANICAL DEMOLITION**  
**FLOOR PLAN**

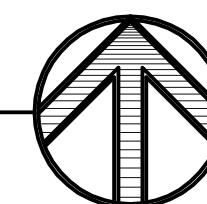
SHEET NO.

**MD101**



## MECHANICAL HVAC DEMOLITION FLOOR PLAN

SCALE: 1/8" = 1'-0"





SHEET NOTES

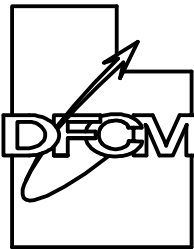
SHEET NOTES:

- 1 REMOVE EXISTING AIR COOLED CHILLER, AND ASSOCIATED PIPING. PATCH ROOF.
- 2 REMOVE EXISTING FLUE THROUGH THE ROOF. PATCH AND SEAL ROOF.
- 3 EXISTING COMBUSTION AIR PENETRATION SHALL BE MODIFIED FOR NEW FLUE. COORDINATE WITH SHEET ME102.
- 4 EXISTING COMBUSTION AIR OPENING SHALL BE ENLARGED. COORDINATE WITH SHEET ME102.
- 5 EXISTING WATER HEATER FLUE SHALL BE RELOCATED. PATCH AND SEAL ROOF. COORDINATE WITH ME102.
- 6 EXISTING ROOF DRAINS SHALL REMAIN.
- 7 EXISTING RELIEF AIR PENTHOUSE SHALL REMAIN. LOCK DAMPER CLOSED.

GENERAL NOTE:

- 1 ROOFING PATCHING, REPAIR, ETC. SHALL BE HIRED BY THIS CONTRACTOR. ROOFING SHALL INCLUDE REPAIRING ANY DAMAGE THAT RESULTS FROM THIS CONTRACT. ROOFING CONTRACTOR SHALL BE CLARK'S KENDRICK BROTHERS, REDD, OR PRIOR APPROVED EQUAL.

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Fax: (801) 538 - 3267

Internet: <http://www.dfcu.state.ut.us>

CONSULTANTS



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**ENGINEERING INC.**  
PROFESSIONAL MECHANICAL ENGINEERING  
1504 East 3300 South Suite 200  
SALT LAKE CITY, UTAH 84106  
(801) 466-4021, FAX 466-8536  
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PROJECT NAME & ADDRESS

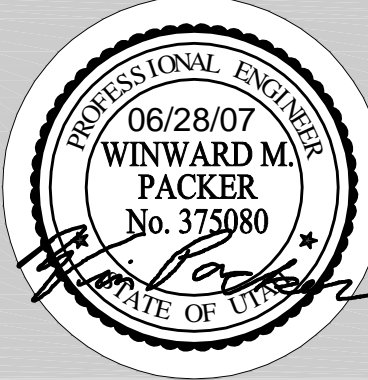
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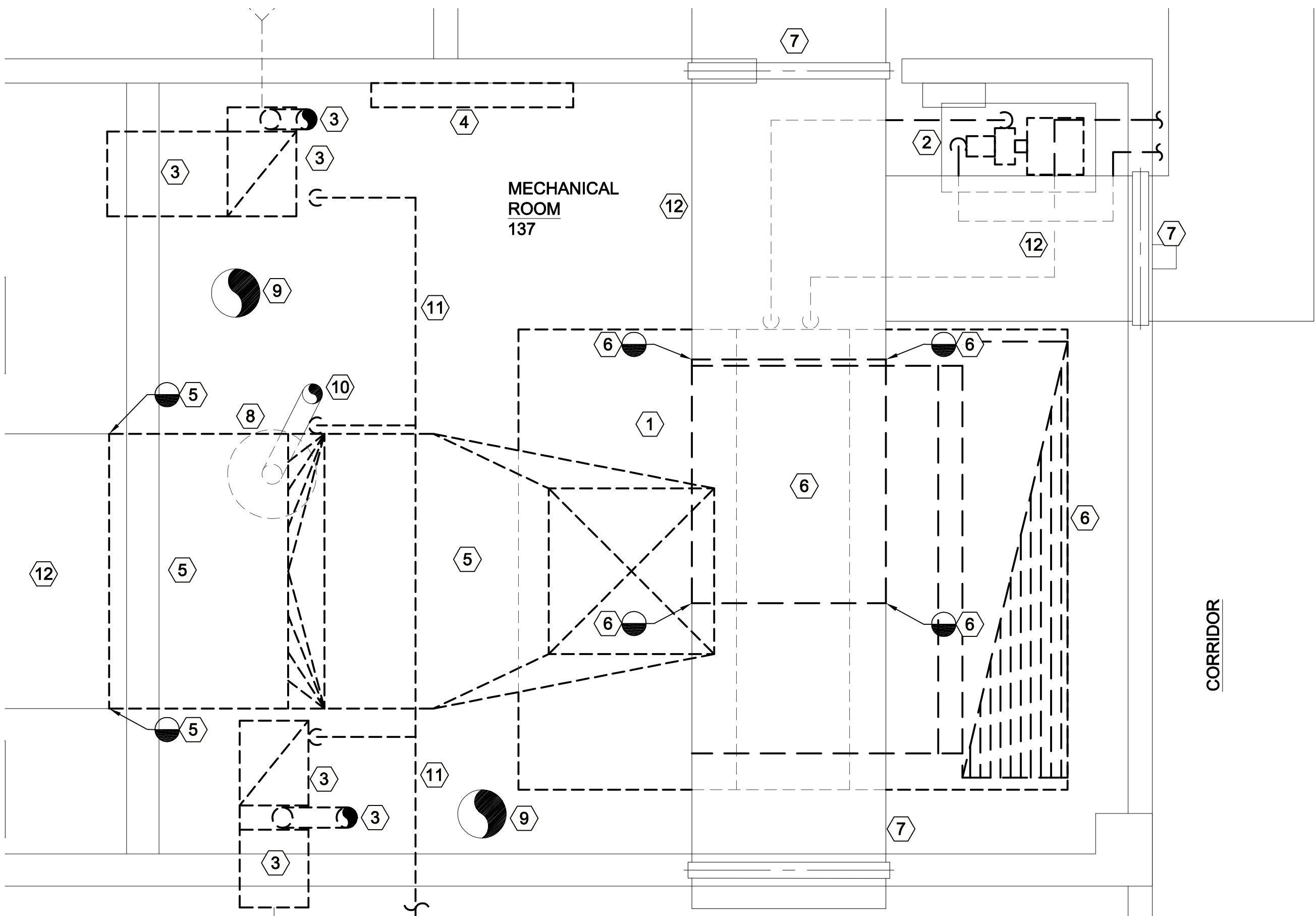


SHEET TITLE

**MECHANICAL DEMOLITION  
FLOOR PLAN**

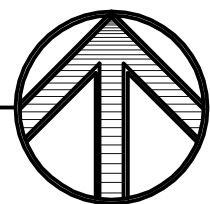
SHEET NO.

**MD102**



LARGE SCALE MECHANICAL DEMOLITION PLAN

SCALE: 1/2" = 1'-0"

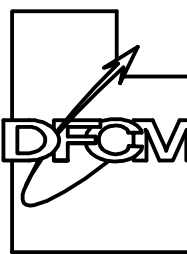


SHEET NOTES

SHEET NOTES:

- ① REMOVE EXISTING AIR HANDLING UNIT AND ACCESSORIES.
- ② REMOVE EXISTING CHILLED WATER PUMP AND ALL ASSOCIATED COMPONENTS INCLUDING PIPING, CONTROLS, ETC.
- ③ REMOVE EXISTING FURNACE AND ASSOCIATED CONTROLS, FLUES, GAS PIPING, ETC. CAP DUCTWORK AT FLOOR.
- ④ REPLACE EXISTING ATC PANEL.
- ⑤ REMOVE EXISTING SECTION OF SUPPLY DUCTWORK AND FIRE DAMPER AS SHOWN.
- ⑥ REMOVE EXISTING FRESH AIR AND RETURN AIR DUCTWORK.
- ⑦ EXISTING FIRE DAMPER SHALL REMAIN.
- ⑧ EXISTING WATER HEATER SHALL REMAIN.
- ⑨ EXISTING COMBUSTION AIR DUCT SHALL BE REMOVED. EXISTING PENETRATION SHALL BE MODIFIED. SEE SHEET ME401.
- ⑩ EXISTING WATER HEATER FLUE THROUGH ROOF SHALL BE RE-LOCATED. SEE SHEET ME401.
- ⑪ REMOVE EXISTING GAS PIPING AFTER NEW BOILER IS OPERATIONAL.
- ⑫ EXISTING SUPPLY AND RETURN DUCTS SHALL REMAIN. SEE ME101, AND ME401.

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SALT LAKE CITY, UTAH 84106  
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PROJECT NAME & ADDRESS

**WEBER STATE UNIVERSITY  
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HVAC UPGRADES DESIGN**

**DFCM No. 07053810**

915 W. Gordon Avenue  
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WP

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STAFF

CHECKED BY:

SLW

DATE:

06/15/07

WHW JOB NO.:

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SHEET TITLE

**LARGE SCALE  
MECHANICAL DEMOLITION  
FLOOR PLAN**

SHEET NO.

**MD401**





## SHEET NOTES

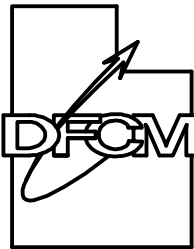
### SHEET NOTES:

- 1 PROVIDE NEW PACKAGED ROOFTOP UNIT. SEE STRUCTURAL FOR SUPPORT.
- 2 PROVIDE NEW COMBUSTION AIR PENTHOUSE. MODIFY EXISTING ROUND OPENING FOR NEW 20X16 PENTHOUSE.
- 3 PROVIDE AIR ROOF MOUNTED AIR COOLED CONDENSING UNIT AND ROOF CURB. SEE ME101 FOR ASSOCIATED INDOOR UNIT.
- 4 EXISTING RELIEF AIR PENTHOUSE SHALL BE ABANDONED IN PLACE. EXISTING RELIEF DAMPER SHALL BE LOCKED SHUT.
- 5 PROVIDE NEW FLUE AND WEATHER RESISTANT CAP FOR NEW BOILER. TERMINATE AT A MINIMUM 5' ABOVE ROOF. INSTALL AND SUPPORT PER FLUE MANUFACTURER'S RECOMMENDATIONS.
- 6 ROUTE REFRIGERANT PIPING TO NEW WALL MOUNTED UNIT IN DATA ROOM. SEE SHEET ME101.

### GENERAL NOTES:

1. CUT, PATCH, AND FLASH ROOF PENETRATIONS AS NECESSARY. THIS CONTRACTOR SHALL HIRE AN OWNER APPROVED ROOFING CONTRACTOR THAT WILL MAINTAIN EXISTING ROOF WARRANTY.
2. ROOFING PATCHING, REPAIR, ETC. SHALL BE HIRED BY THIS CONTRACTOR. ROOFING SHALL INCLUDE REPAIRING ANY DAMAGE THAT RESULTS FROM THIS CONTRACT. ROOFING CONTRACTOR SHALL BE CLARK'S KENDRICK BROTHERS, REDD, OR PRIOR APPROVED EQUAL.

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SHEET TITLE

**NEW MECHANICAL ROOF  
PLAN**

SHEET NO.

**ME102**

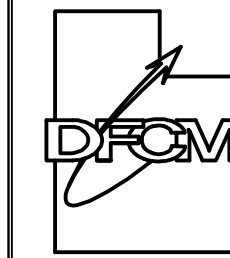
## SHEET NOTES

## SHEET NOTES:

- 1 SEE SHEET ME401 FOR LARGE SCALE MECHANICAL ROOM PLAN.
- 2 PROVIDE NEW VAV BOX WITH NEW HOT WATER COIL. PROVIDE NEW HOT WATER PIPING. COORDINATE EXACT LOCATION OF VAV BOXES WITH SHEET METAL PLAN SHEET ME101.
- 3 EXISTING GAS PIPING AND METER SHALL REMAIN. COORDINATE WITH QUESTAR TO SET METER AT 1056 CFH AND 4 OZ.
- 4 PROVIDE NEW 2- $\frac{1}{2}$ " GAS PIPING TO BOILER AND WATER HEATER. TIE INTO EXISTING 3" LINE. FIELD VERIFY EXACT LOCATION OF EXISTING PIPING.
- 5 PROVIDE CSD-1 GAS TRAIN AT BOILER. SEE DETAIL.

## GENERAL NOTE:

1. ALL WORK DONE OUTSIDE OF MECHANICAL ROOM SHALL BE DONE BETWEEN AUGUST 27, 2007 AND OCTOBER 01, 2007.

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Construction & Management  
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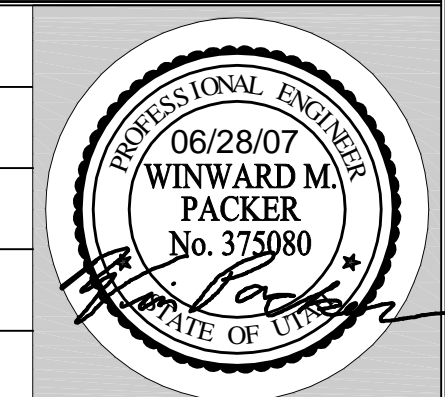
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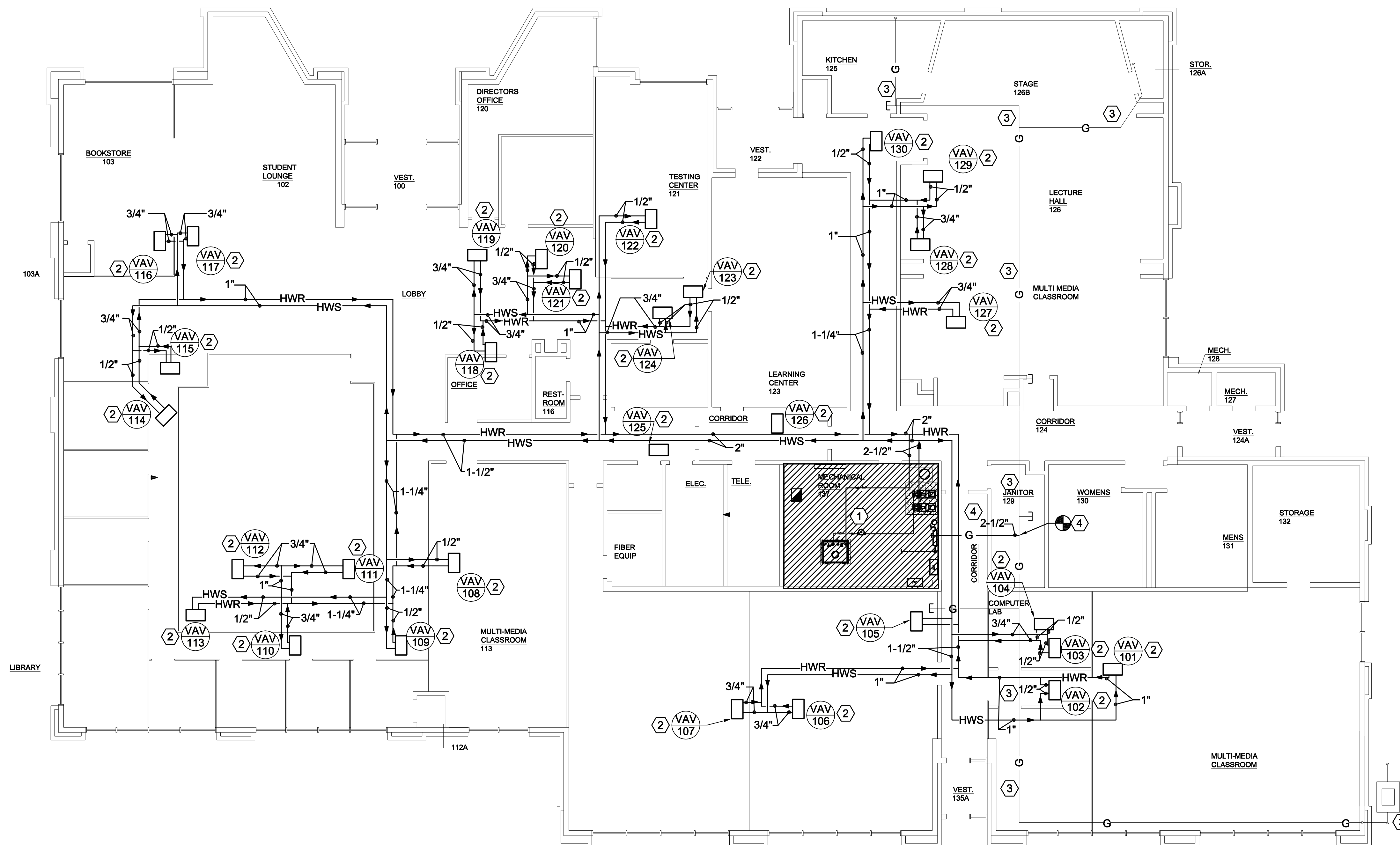
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SHEET TITLE



**MECHANICAL PIPING  
FLOOR PLAN**

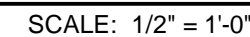
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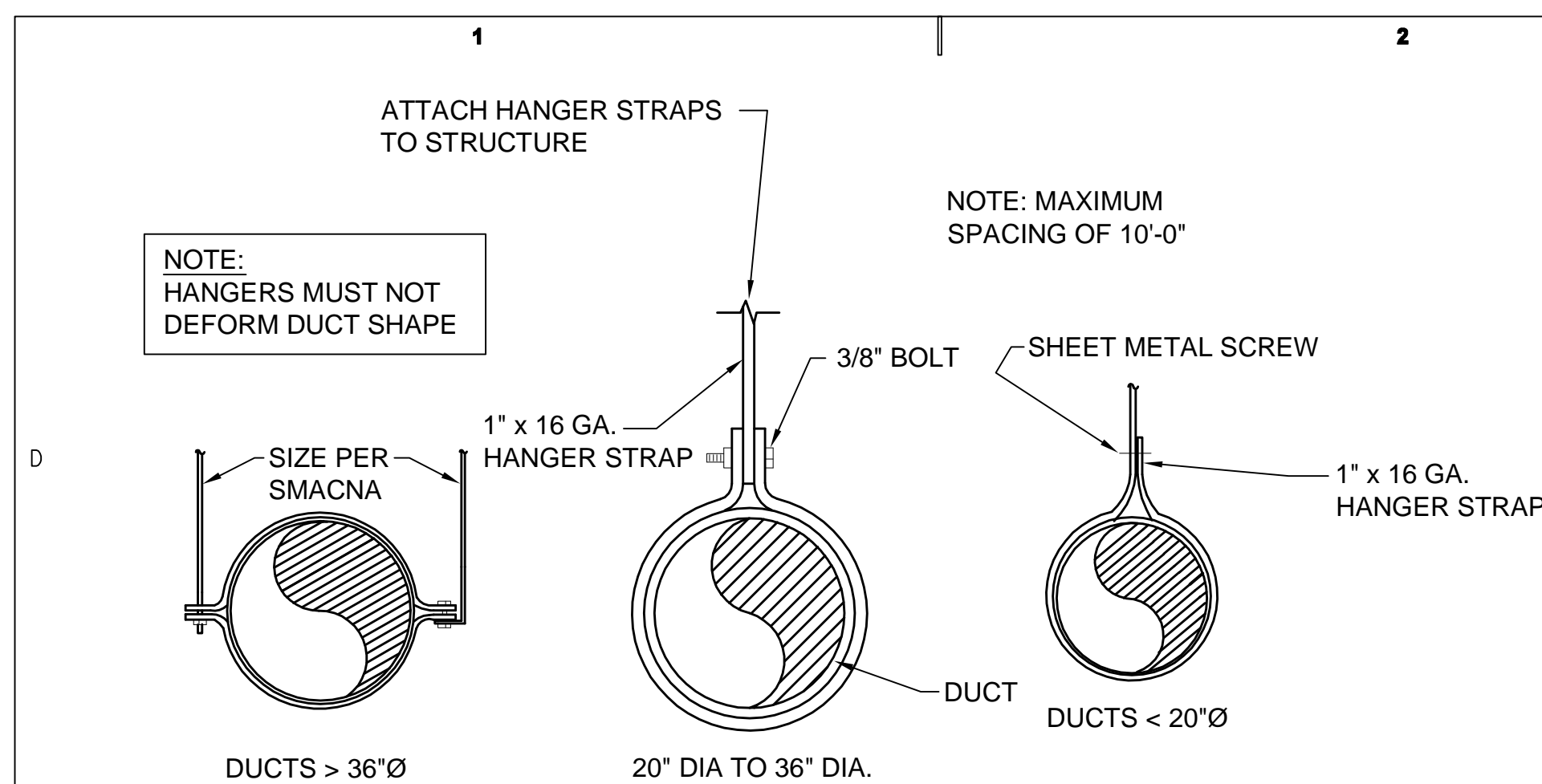
**ME103**



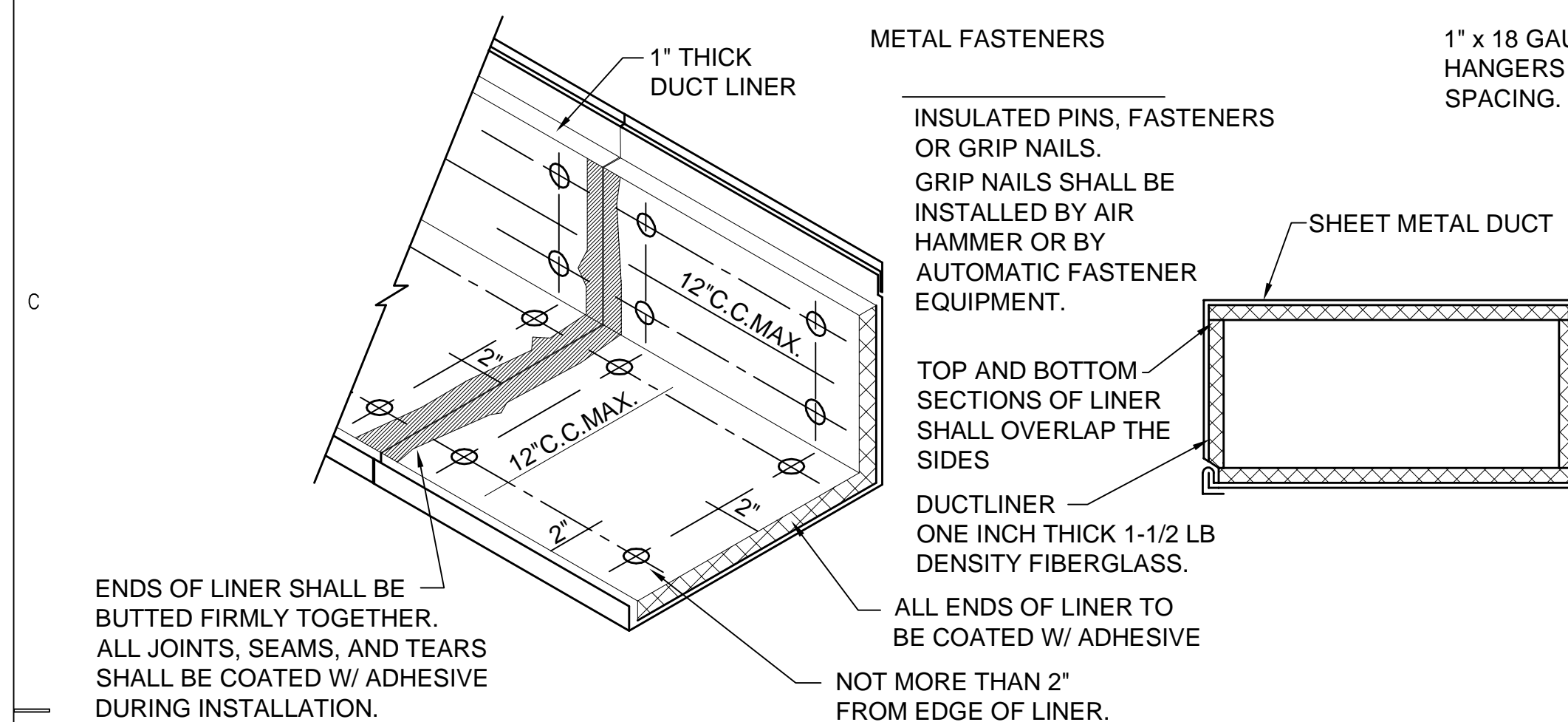
## MECHANICAL PIPING FLOOR PLAN

SCALE: 1/8" = 1'-0"

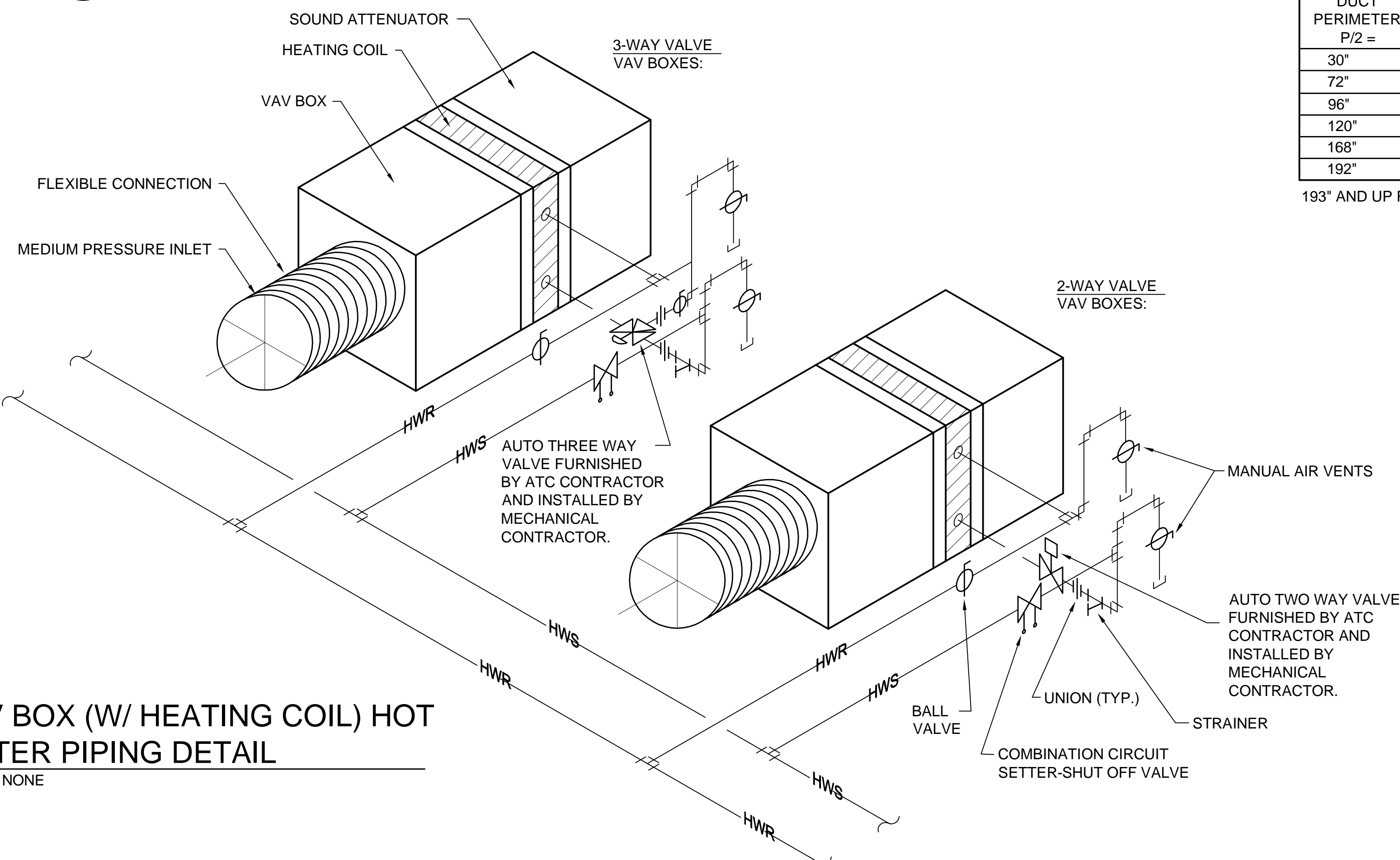




# D1 ROUND DUCT SUPPORT DETAIL

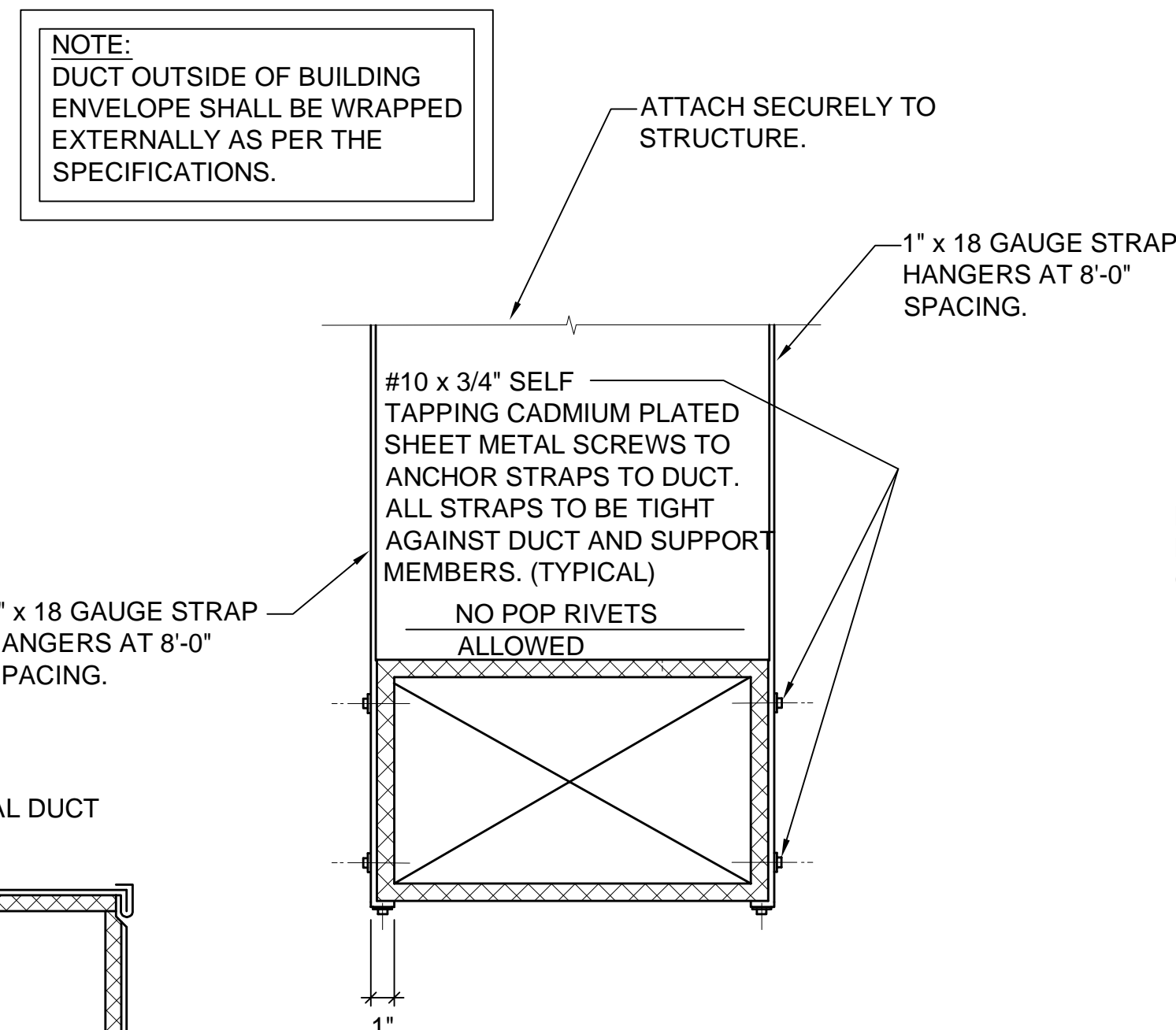


**B1 DUCT LINER DETAIL**  
SCALE: NONE

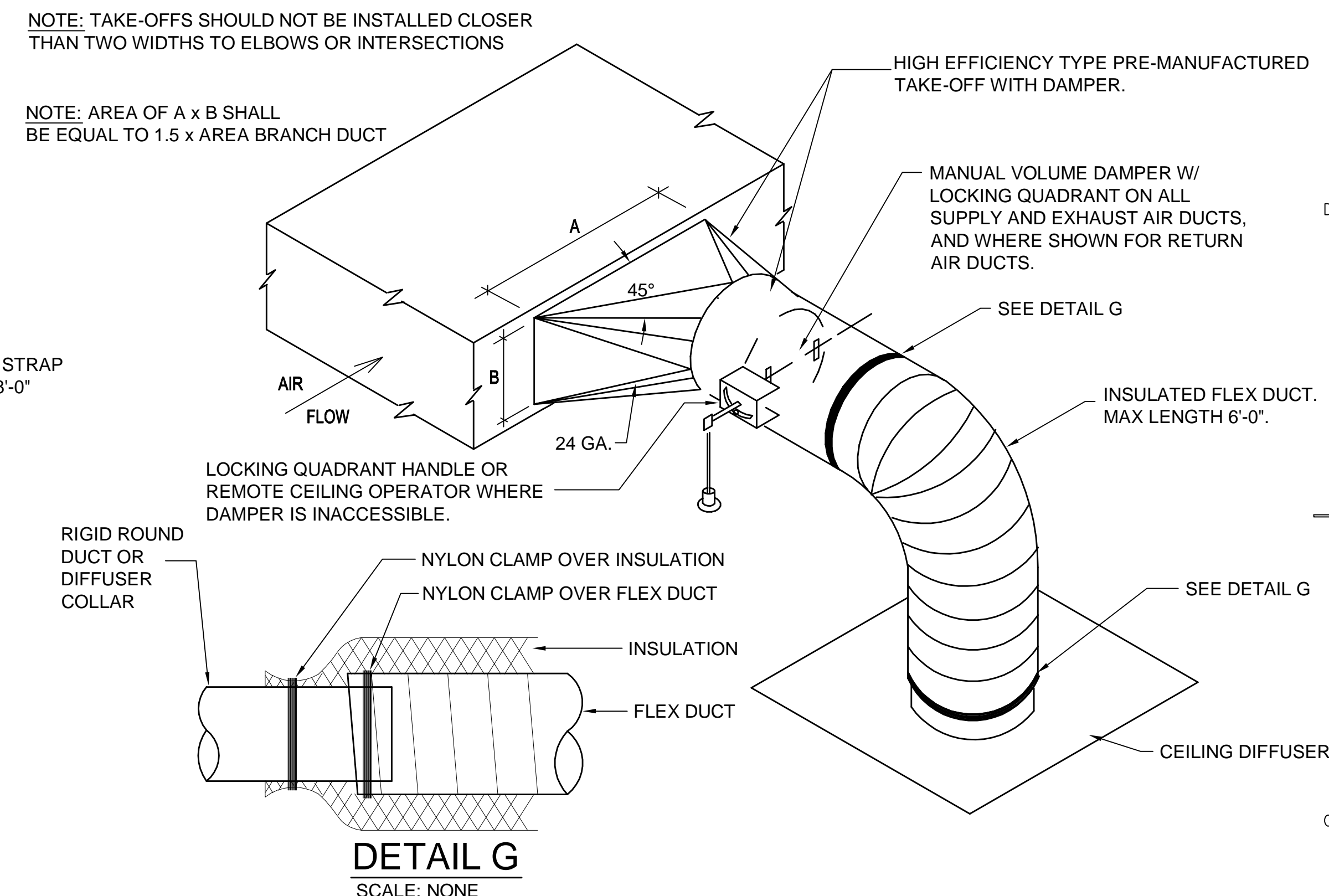


# VAV BOX (W/ HEATING COIL) HOT WATER PIPING DETAIL

SCALE: NONE



**C3** DUCT STRAP HANGER DETAIL  
SCALE: NONE







**C4** **SQUARE-TO-ROUND TAKE-OFF DETAIL**  
SCALE: NONE

HANGER SIZES FOR DOUBLE HUNG RECTANGULAR DUCTS						
MAXIMUM HALF OF DUCT PERIMETER P/2 =	PAIR AT 10 FT. SPACING		PAIR AT 8 FT. SPACING		PAIR AT 4 FT. SPACING	
	STRAP	WIRE/ROD	STRAP	WIRE/ROD	STRAP	WIRE/ROD
30"	1" x 22 ga.	10 ga.	1" x 22 ga.	10 ga.	1" x 22 ga.	12 ga.
72"	1" x 18 ga.	3/8"	1" x 20 ga.	1/4"	1" x 22 ga.	1/4"
96"	1" x 16 ga.	3/8"	1" x 18 ga.	3/8"	1" x 22 ga.	1/4"
120"	1-1/2" x 16 ga.	1/2"	1" x 16 ga.	3/8"	1" x 20 ga.	1/4"
168"	1-1/2" x 16 ga.	1/2"	1-1/2" x 16 ga.	1/2"	1" x 18 ga.	3/8"
192"	----	1/2"	1-1/2" x 16 ga.	1/2"	1" x 16 ga.	3/8"

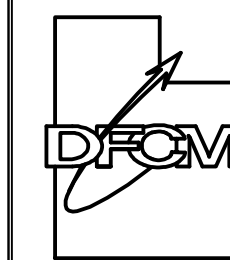
193" AND UP REQUIRE SPECIAL ANALYSIS

**B4 DUCT HANGER SIZING**  
SCALE: NONE

DIMENSION OF LONGEST SIDE, INCHES	SHEET METAL GAGE (ALL FOUR SIDES)	MINIMUM REINFORCING ANGLE SIZE AND MAXIMUM LONGITUDINAL SPACING BETWEEN TRANSVERSE JOINTS &/OR INTERMEDIATE REINFORCING	TRANSVERSE REINFORCING (1)				
			AT JOINTS				
			MIN. H. IN.	 DRIVE SLIP	 HEMMED S SLIP	 ALTER'NT BAR SLIP	 REIN- FORCE BAR SLIP
				RECOM- MEN- DED GAGE	RECOM- MEN- DED GAGE	RECOM- MEN- DED GAGE	RECOM- MEN- DED GAGE
UP THRU 12	26	NONE REQUIRED	1	26	26	24	24
13 - 18	24	NONE REQUIRED	1	24	24	24	24
19 - 30	24	1"x1"x1/8" @ 60 IN	1	-	24	24	24
31 - 36	22	1"x1"x1/8" @ 60 IN	1	-	-	22	22

1. TRANSVERSE REINFORCING SIZE IS DETERMINED BY DIMENSION OF SIDE TO WHICH ANGLE IS APPLIED.

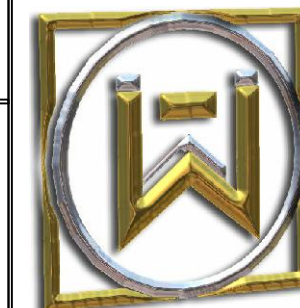
**A4 DUCT CONSTRUCTION DETAIL**  
SCALE: NONE



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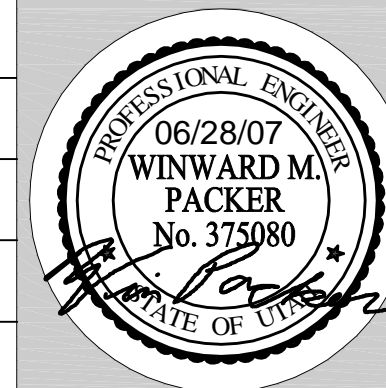
## WEBER STATE UNIVERSITY TRAINING & LEARNING CENTER, HVAC UPGRADES DESIGN

**DFCM No. 07053810**

915 W. Gordon Avenue  
Layton, Utah

MARK	DATE	REVISION

A	PROJECT MANAGER: WP
	DRAWN BY: STAFF
	CHECKED BY: SLW
	DATE: 06/15/07
	WHW JOB NO.: 07021
	SHEET TITLE



## MECHANICAL DETAILS

SHEET NO.

# ME501

CONSULTANTS



PROJECT NAME & ADDRESS

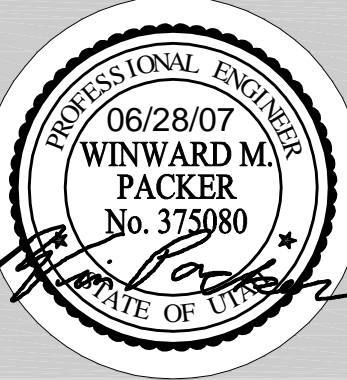
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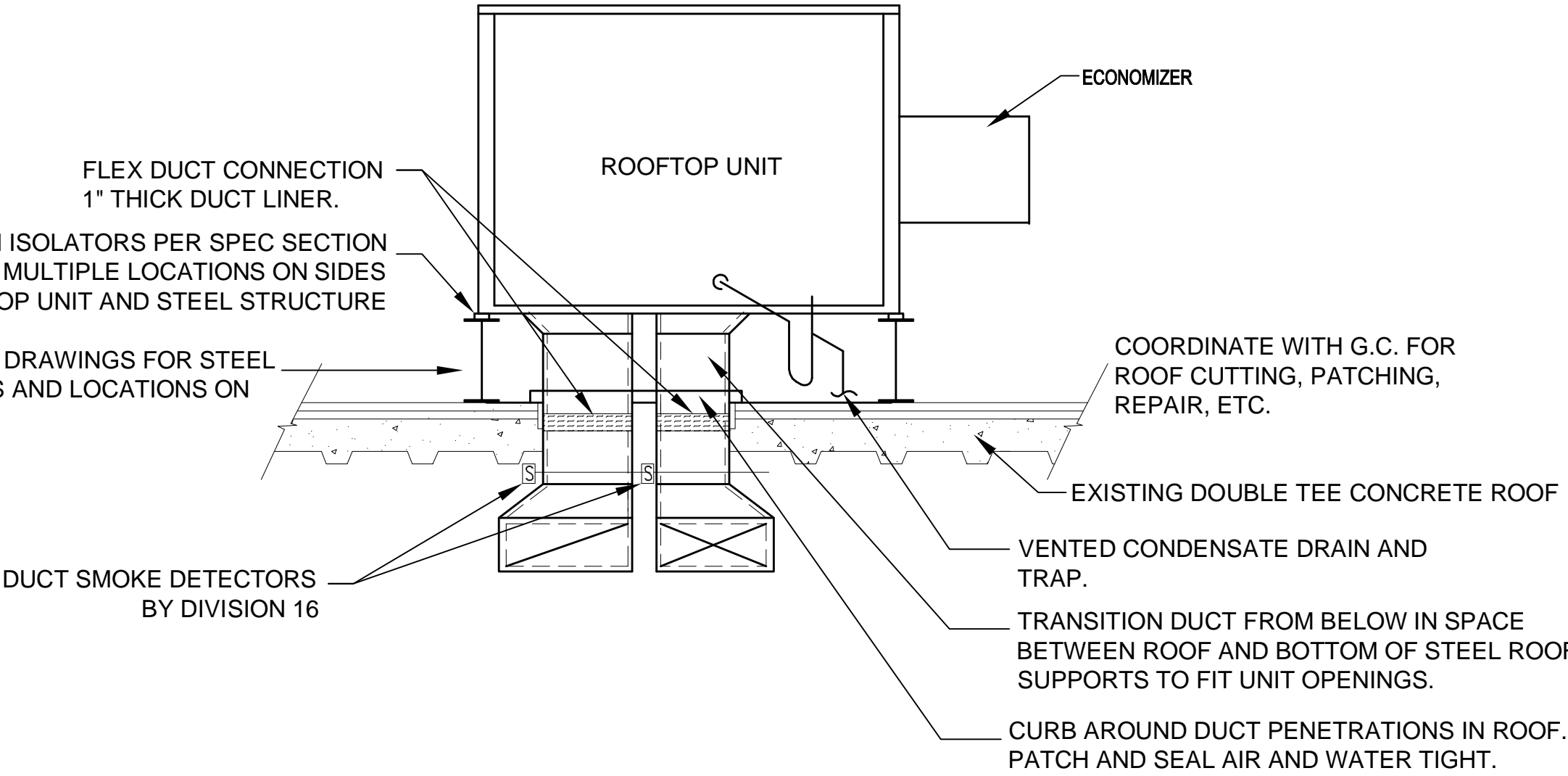


MECHANICAL DETAILS

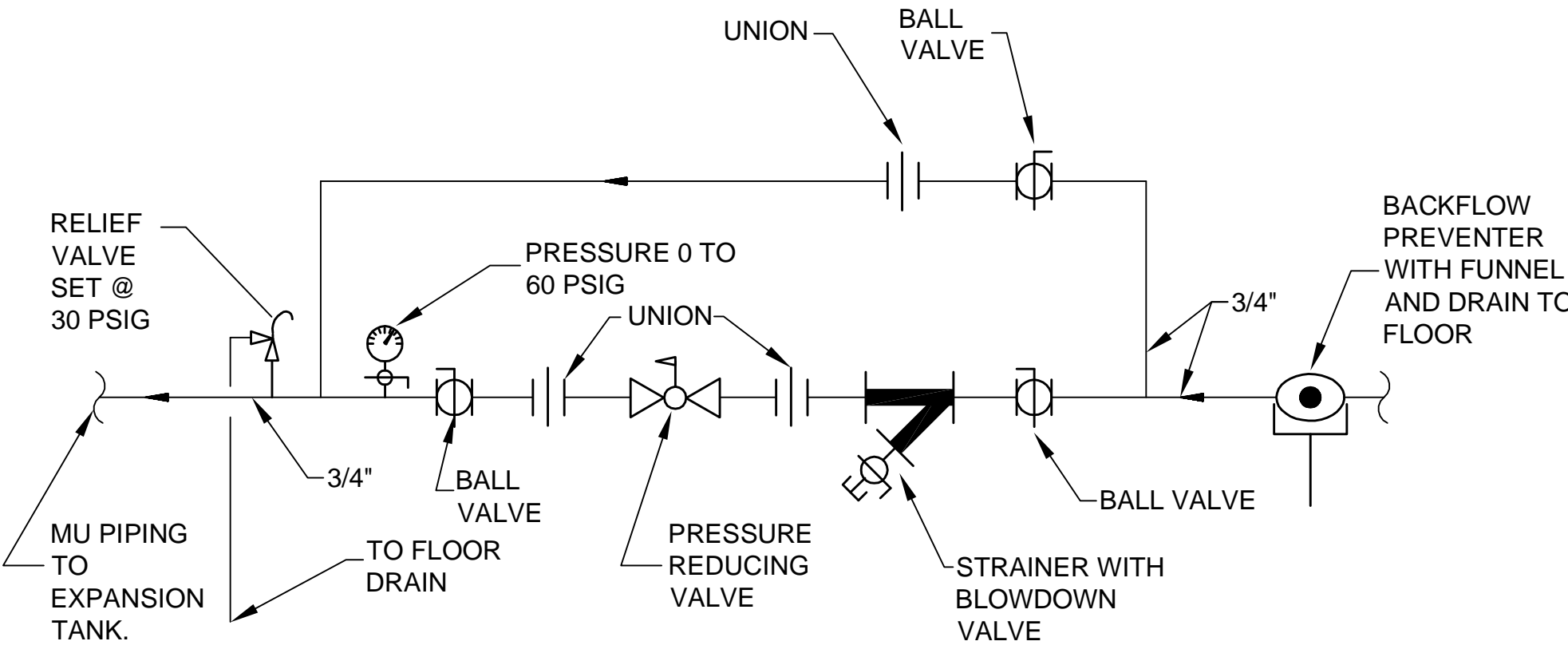
SHEET NO.

ME502

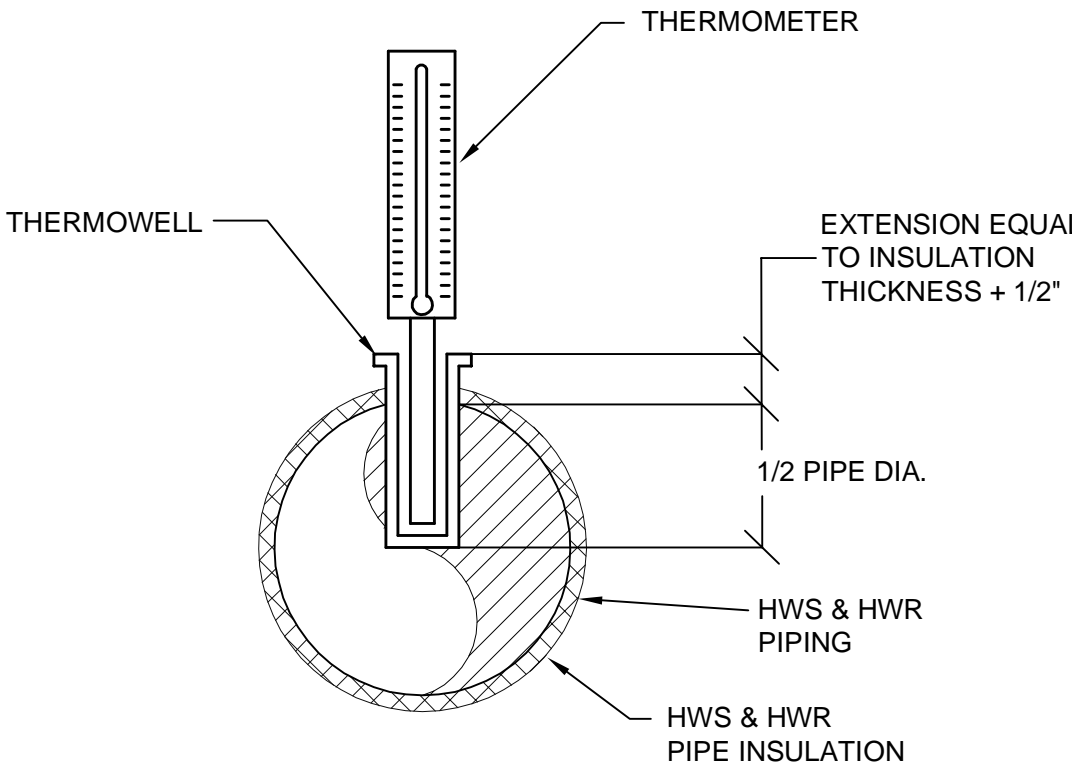
LEGEND	
NO.	ITEM
1	GAS INLET
2	SUPPORT GAS TRAIN FROM PAD OR FLOOR
3	GAS PRESSURE REGULATOR
4	MOTORIZED SAFETY VALVE
5	HIGH PRESSURE SWITCH
6	LOW PRESSURE SWITCH
7	VENT VALVE AND VENT
8	TEST COCK
9	SHUT-OFF COCK
10	PRESSURE GAUGE
11	SOLENOID VALVE
12	GAS TO PILOT
13	GAS TAKE-OFF TO PILOT
14	MOTORIZED MODULATING VALVE
15	SHUT-OFF VALVE
16	UNION
17	RELIEF VALVE-VENT TO ATMOSPHERE
18	CONNECT TO EXISTING GAS LINE THIS LOCATION. SEE SHEET MP401. FIELD VERIFY EXACT LOCATION.



C4 ROOFTOP UNIT DETAIL  
SCALE: NONE

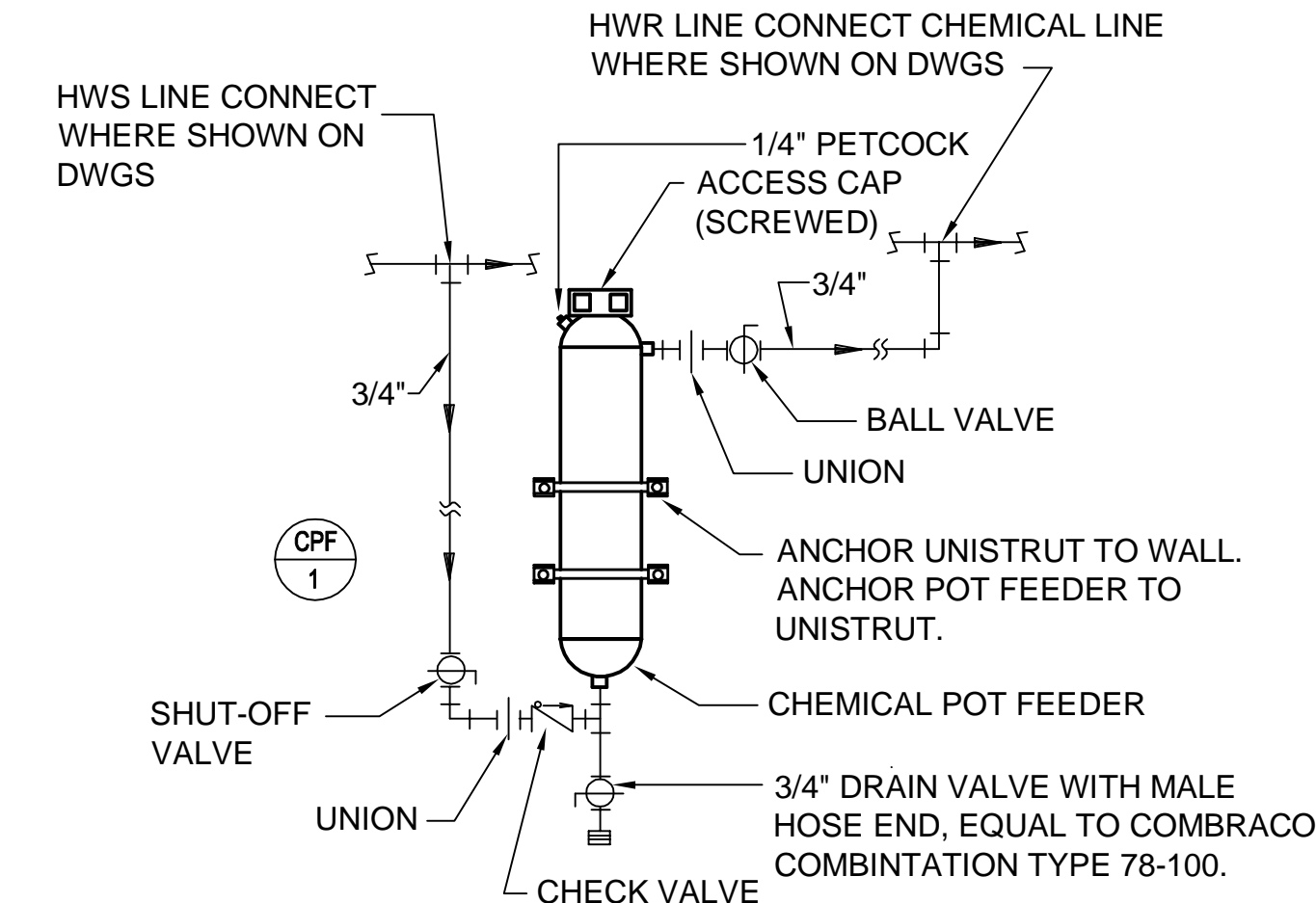
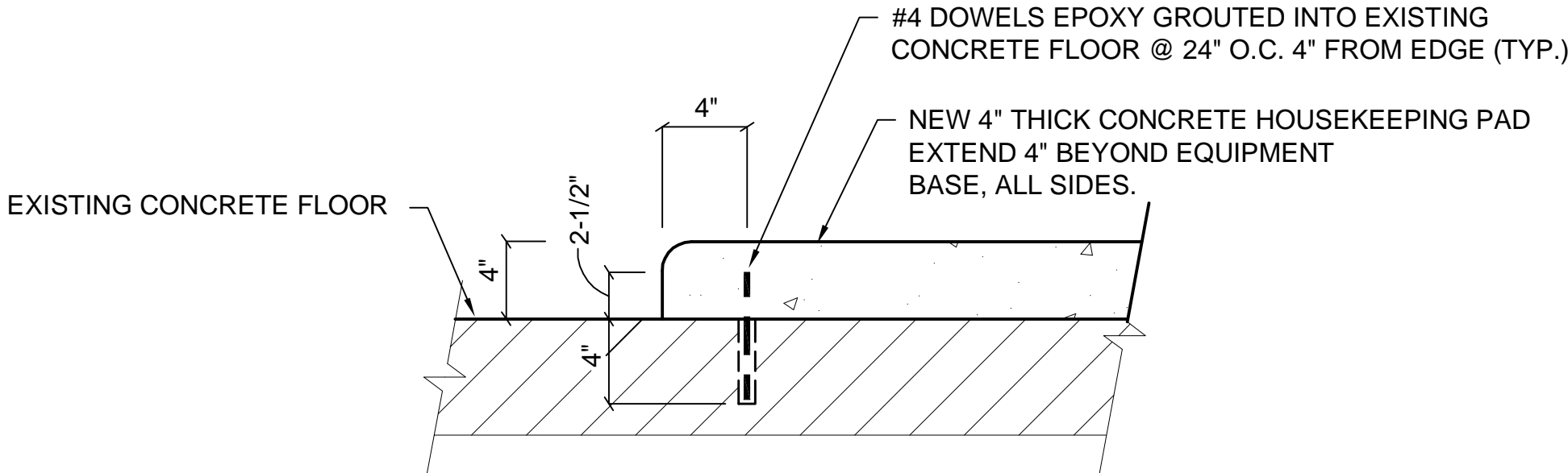


B4 MAKE-UP WATER PRV STATION DETAIL  
SCALE: NONE



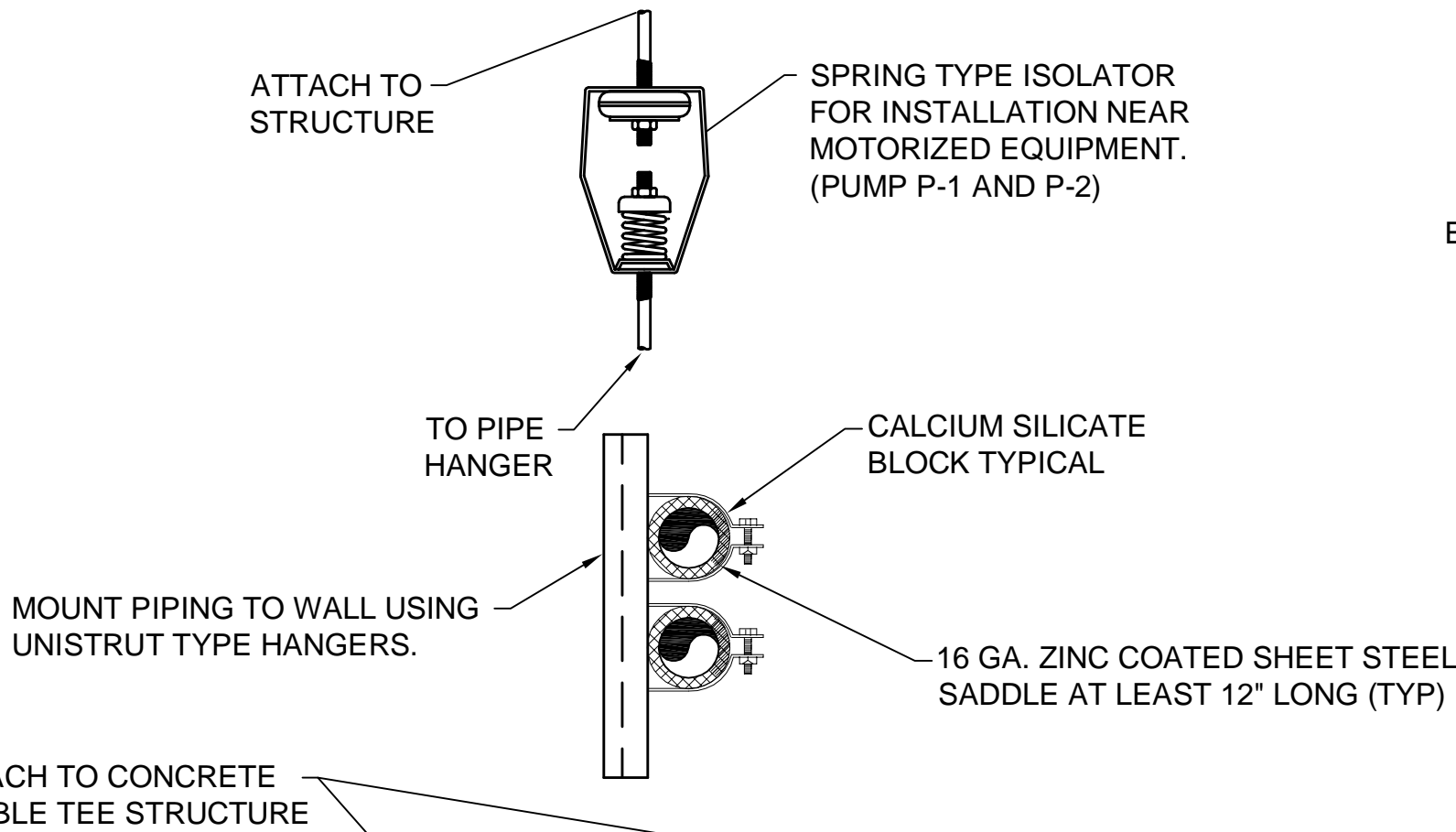
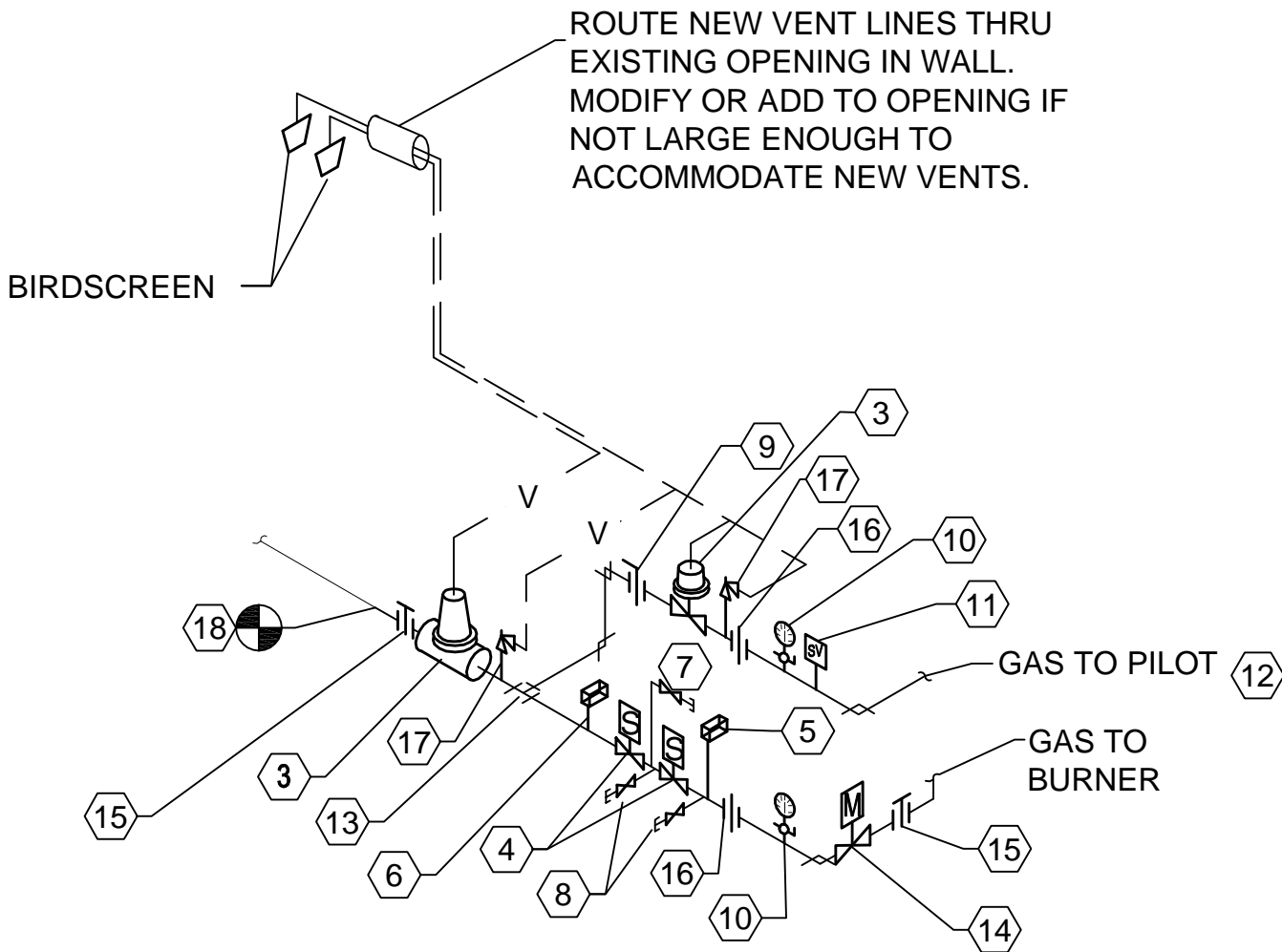
A4 THERMOWELL DETAIL  
SCALE: NONE

B2 HOUSEKEEPING PAD DETAIL  
SCALE: NONE



A2 CHEMICAL POT FEEDER AND PIPING DETAIL  
SCALE: NONE

C1 CSD-1 AUTO-IGNITION GAS TRAIN DETAIL  
SCALE: NONE



A1 PIPE HANGER DETAIL  
SCALE: NONE



BOILER SCHEDULE										
SYMBOL	MBH INPUT	MBH OUTPUT	WATER TEMP		GPM	DELTA P FT	FAN MOTOR	SHIPPING WEIGHT LBS	MAKE AND MODEL #	SCHEDULE NOTES
			IN	OUT						
<div><div>B</div><div>1</div></div>	900	765	190	170	73	0.75	1/3	2110	BRYAN HECLM-90	1,2,3,4
1. BOILER RATINGS ARE FOR SEA LEVEL.										
2. SEE SPECIFICATION FOR OTHER APPROVED MANUFACTURERS.										
3. VERIFY FLUE SIZING AND MATERIAL WITH EACH BOILER MANUFACTURER AND INSTALL ACCORDINGLY.										
4. PROVIDE 120V CONTROL CIRCUIT, AND 120V BURNER FAN MOTOR CIRCUIT.										

PUMP SCHEDULE												
SYMBOL	TYPE	GPM	FT. HEAD	SUCTION SIZE	DISCHARGE SIZE	MOTOR			SIZE	SERVICE	COMMENTS	SCHEDULE NOTES
						V - Ø - Hz	HP	RPM				
<div><div>P</div><div>1</div></div>	BASE MTD.	73	40	2	1.5	480/3/60	2	1750	1-1/2 AL	HEATING WATER	BELL & GOSSETT 1510	1,2,3,4
<div><div>P</div><div>2</div></div>	BASE MTD.	73	40	2	1.5	480/3/60	2	1750	1-1/2 AL	HEATING WATER	BELL & GOSSETT 1510	1,2,3,4
1. PROVIDE REMOVABLE INSULATION KIT AROUND AND SUCTION												
2. ALL PUMPS SHALL BE SIZED IN THE MIDDLE OF THE CURVE.												
3. SEE SPECIFICATIONS FOR OTHER APPROVED MANUFACTURERS.												
4. VFD PROVIDED AND INSTALLED BY ATC.												

EXPANSION TANK SCHEDULE						
SYMBOL	ACCEPTANCE VOLUME/ TANK VOLUME (GAL.)	HEIGHT	DIAMETER	APPROXIMATE FLOOD WEIGHT LBS	COMMENTS	SCHEDULE NOTES
<div><div>ET</div><div>1</div></div>	22.6/55.7	69"	16"	632	BELL & GOSSETT D-100V	1,2
1. FOR OTHER APPROVED MANUFACTURERS SEE SPECIFICATIONS.						
2. PROVIDE WITH ACCESSORIES PER DETAIL B3/ME501.						

AIR ELIMINATOR SCHEDULE						
SYMBOL	CAPACITY GPM	MAX PRESSURE DROP FT.	INLET / OUTLET SIZE	SHIPPING WEIGHT LBS.	MAKE & MODEL	SCHEDULE NOTES
<div><div>AE</div><div>1</div></div>	76.5	0.3	2 1/2"	95	BELL & GOSSETT RL-2 1/2	1
1. FOR OTHER APPROVED MANUFACTURERS SEE SPECIFICATIONS.						

ROOFTOP AIR CONDITIONER SCHEDULE																			
SYMBOL	MANUFACTURER & MODEL NUMBER	SA CFM	OSA CFM	E.S.P. IN W.G.	COOLING			ELECTRICAL								EER/ SEER	IPLV	OPER. WT. (LBS)	SCHEDULE NOTES
					AMB. AIR (DB)	AMB. AIR (WB)	MIN. TOTAL MBH	V - Ø - Hz	COMPRESSOR #	COMPRESSOR RLA (EACH)	COMPRESSOR LRA (EACH)	EVAP BLOWER HP	POWER EXHAUST HP	MCA	MOCp				
<div><div>RTU</div><div>1</div></div>	TRANE SAHFF504	19,400	SEE NOTES	2.0	95	65	555	460/3/60	4	27.3, 18.2, 27.3, 18.2	178, 117, 178, 117	25	10	146	175	10.4	10.4	8400	1,2,3,4,5
1. E. S. P. DOES NOT INCLUDE LOSSES THROUGH ACCESSORIES.																			
2. RATED MINIMUM INPUT AT SEA LEVEL.																			
3. PROVIDE ONE 15 AMP, 120 VOLT, DUPLEX GFCI SERVICE OUTLET. OUTLET SHALL BE FACTORY INSTALLED AND FIELD WIRED.																			
4. PROVIDE WITH FACTORY INSTALLED VFD WITH DISCONNECT FOR SUPPLY AND EXHAUST FANS.																			
5. UNIT SHALL BE CONTROLLED BY STAEFFA TALON BUILDING MANAGEMENT SYSTEM. COORDINATE CONTROLS WITH ATKINSON ELECTRONICSAT 801-261-3600.																			

DIFFUSER SCHEDULE								
SYMBOL	TYPE	MAX CFM	FACE SIZE	NCK SIZE	CEILING TYPE	BLOW	PATTERN	SCHEDULE NOTES
<div><div>D-1</div><div>CFM</div></div>	CEILING	150	6X6	6"Ø	LAY-IN	4--WAY	<div><div></div><div></div><div></div><div></div></div>	1,2,3,4
<div><div>D-2</div><div>CFM</div></div>	CEILING	300	9X9	8"Ø	LAY-IN	4--WAY	<div><div></div><div></div><div></div><div></div></div>	1,2,3,4
<div><div>D-3</div><div>CFM</div></div>	CEILING	500	12X12	10"Ø	LAY-IN	4--WAY	<div><div></div><div></div><div></div><div></div></div>	1,2,3,4
<div><div>D-4</div><div>CFM</div></div>	CEILING	750	15X15	14"Ø	LAY-IN	4--WAY	<div><div></div><div></div><div></div><div></div></div>	1,2,3,4
<div><div>D-4</div><div>CFM</div></div>	CEILING	1000	18X18	16"Ø	LAY-IN	4--WAY	<div><div></div><div></div><div></div><div></div></div>	1,2,3,4
1. PROVIDE LAY-IN CEILING AND BORDER / MODULE AS REQUIRED.								
2. MAXIMUM NC 25 AT CFM LISTED.								
3. PROVIDE TRANSITION TO DIFFUSER NECK SIZE AS REQUIRED TO DUCT WORK SHOWN ON PLAN.								
4. DIFFUSER SHALL BE PRICE MODEL SMD OR EQUAL BY APPROVED MANUFACTURER IN SPECIFICATIONS.								

REGISTER, LOUVER & GRILLE SCHEDULE							
SYMBOL	TYPE	SERVICE	MAX CFM	NOMINAL SIZE	THROAT SIZE	CEILING TYPE	SCHEDULE NOTES
<div><div>R-1</div></div>	CEILING	RETURN	250	10/10	10/10	LAY-IN	1,2,3,4
<div><div>R-2</div></div>	CEILING	RETURN	600	24/12	24/12	LAY-IN	1,2,3,4
<div><div>R-3</div></div>	CEILING	RETURN	1200	22/22	22/22	LAY-IN	1,2,3,4
PA-1	PENTHOUSE	CA	NA	20/16/16	20/16	NA	3,5
REGISTER, LOUVER AND DIFFUSER SCHEDULE NOTES:							
1. MAXIMUM NC = 25 @ MAXIMUM CFM NOTED.							
2. SHALL BE PRICE 535 OR EQUAL BY OTHER APPROVED MANUFACTURERS.							
3. SEE SPECIFICATIONS FOR APPROVED MANUFACTURERS.							
4. FINISH SHALL BE OFF-WHITE BAKED ENAMEL.							
5. PROVIDE WITH BIRD SCREENS, AND KYNAR FINISH TO MATCH BUILDING TRIM.							

State of Utah

Department of Administrative Services

DFCM

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Fax: (801) 538 - 3267

Internet: <http://www.dfc.state.ut.us>

CONSULTANTS

W

WHW  
ENGINEERING INC.  
PROFESSIONAL MECHANICAL ENGINEERING  
1354 East 3300 South Suite 200  
SALT LAKE CITY, UTAH 84106  
(801)466-4021, FAX 466-9536  
EMAIL: [excellence@whw-engineering.com](mailto:excellence@whw-engineering.com)

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SLW

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WHW JOB NO.:  
07021

SHEET TITLE

PROFESSIONAL ENGINEER  
06/28/07  
WINWARD M.  
PACKER  
No. 375080

MECHANICAL SCHEDULES

SHEET NO.  
**ME601**

1					2					
SPLIT SYSTEM SCHEDULE - INDOOR UNIT										
ITEM NO.	MANUFACTURER AND MODEL NO.	AREA & ROOMS SERVED	CFM	MBH	ELECTRICAL			OSA CFM (MIN)	OPER WT. LBS.	COMMENTS
					MCA	MAX FUSE	V-Ø-HZ			
FC 1	MITSUBISHI PKA-A18	IT ROOM	425	18	1	15	208-1-60	-	35	COOLING ONLY, PROVIDE WITH CONDENSATE PUMP. ROUTE TO FLOOR DRAIN IN MECHANICAL ROOM. PROVIDE WITH DISCONNECT.

D

SPLIT SYSTEM SCHEDULE - OUTDOOR UNIT										
ITEM NO.	MANUFACTURER AND MODEL NO.	AREA & ROOMS SERVED	CAPACITY BTU/HR		SEER	ELECTRICAL			OPER WT. LBS.	COMMENTS
			HEATING	COOLING		MCA	MAX FUSE	V-Ø-HZ		
<div>CU 1</div>	MITSUBISHI PUY-A18NHA	IT ROOM	-	18,000	14.1	13	15	208-1-60	100	

C

B

A

VAV BOX SCHEDULE															
SYMBOL	INLET DIA. (INCHES)	COOLING			HEATING (20° DELTA T)								NC LEVEL	MANUF. MODEL #	SCHEDULE NOTES
		MAX CFM	MIN CFM	MX APD (IN)	COIL EAT	COIL LAT	MAX CFM	COIL MBH	FLOW GPM	EWT	(FT) PD	ROWS			
VAV 101	16	2000	600	0.3	60	100	2000	73.6	7.4	190	7	2	25	PRICE SDV	1, 2, 3
VAV 102	6	300	90	0.3	60	100	300	11.04	1.2	190	2	2	25	PRICE SDV	1, 2, 3
VAV 103	6	250	75	0.3	60	100	250	9.2	1.0	190	2	2	25	PRICE SDV	1, 2, 3
VAV 104	10	600	210	0.3	60	100	600	25.76	2.6	190	2	2	25	PRICE SDV	1, 2, 3
VAV 105	8	400	120	0.3	60	100	400	14.72	1.5	190	2	2	25	PRICE SDV	1, 2, 3
VAV 106	12	1150	345	0.3	60	100	1150	42.32	4.3	190	4	2	25	PRICE SDV	1, 2, 3
VAV 107	12	1150	345	0.3	60	100	1150	42.32	4.3	190	4	2	25	PRICE SDV	1, 2, 3
VAV 108	8	500	150	0.3	60	100	500	18.4	1.9	190	2	2	25	PRICE SDV	1, 2, 3
VAV 109	8	400	120	0.3	60	100	400	14.72	1.5	190	2	2	25	PRICE SDV	1, 2, 3
VAV 110	10	800	240	0.3	60	100	800	29.44	3.0	190	2	2	25	PRICE SDV	1, 2, 3
VAV 111	10	800	240	0.3	60	100	800	29.44	3.0	190	2	2	25	PRICE SDV	1, 2, 3
VAV 112	10	800	240	0.3	60	100	800	29.44	3.0	190	2	2	25	PRICE SDV	1, 2, 3
VAV 113	10	600	180	0.3	60	100	600	22.08	2.3	190	2	2	25	PRICE SDV	1, 2, 3
VAV 114	6	275	82.5	0.3	60	100	275	10.12	1.1	190	2	2	25	PRICE SDV	1, 2, 3
VAV 115	8	425	127.5	0.3	60	100	425	15.64	1.6	190	2	2	25	PRICE SDV	1, 2, 3
VAV 116	10	600	180	0.3	60	100	600	22.08	2.3	190	2	2	25	PRICE SDV	1, 2, 3
VAV 117	10	800	240	0.3	60	100	800	29.44	3	190	2	2	25	PRICE SDV	1, 2, 3
VAV 118	6	130	39	0.3	60	100	130	4.784	0.5	190	2	2	25	PRICE SDV	1, 2, 3
VAV 119	12	1020	306	0.3	60	100	1020	37.536	3.8	190	4	2	25	PRICE SDV	1, 2, 3
VAV 120	8	320	96	0.3	60	100	320	11.776	1.2	190	2	2	25	PRICE SDV	1, 2, 3
VAV 121	6	190	57	0.3	60	100	190	6.992	0.7	190	2	2	25	PRICE SDV	1, 2, 3
VAV 122	8	500	150	0.3	60	100	500	18.4	1.9	190	2	2	25	PRICE SDV	1, 2, 3
VAV 123	10	600	180	0.3	60	100	600	22.08	2.3	190	2	2	25	PRICE SDV	1, 2, 3
VAV 124	8	400	120	0.3	60	100	400	14.72	1.5	190	2	2	25	PRICE SDV	1, 2, 3
VAV 125	8	450	135	0.3	—	—	—	—	—	—	—	—	25	PRICE SDV	1, 2, 3
VAV 126	8	400	120	0.3	—	—	—	—	—	—	—	—	25	PRICE SDV	1, 2, 3
VAV 127	12	1200	360	0.3	60	100	1200	44.16	4.5	190	4	2	25	PRICE SDV	1, 2, 3
VAV 128	12	1200	360	0.3	60	100	1200	44.16	4.5	190	4	2	25	PRICE SDV	1, 2, 3
VAV 129	10	700	210	0.3	60	100	700	25.76	2.6	190	2	2	25	PRICE SDV	1, 2, 3
VAV 130	6	300	90	0.3	60	100	300	11.04	1.2	190	2	2	25	PRICE SDV	1, 2, 3
1. SEE SPECIFICATIONS FOR APPROVED MANUFACTURERS. 2. ADDITIVE ALTERNATE #1: TIE VAV BOX INTO OCCUPANCY SENSORS (FURNISHED UNDER DIVISION 16). RE-SET VAV MINIMUM AIRFLOWS TO 0 CFM WHEN ZONE IS UNOCCUPIED. 3. NC IS RATED DISCHARGE NC AT 1.0" ΔPS ACROSS UNIT															

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Fax: (801) 538 - 3267

Internet: http://www.dfcu.state.ut.us

CONSULTANTS

W

WHW

ENGINEERING INC.

PROFESSIONAL MECHANICAL ENGINEERING

1504 East 3300 South Suite 200

SALT LAKE CITY, UTAH 84106

(801)466-4021, FAX 466-8536

EMAIL: excellence@whw-engineering.com

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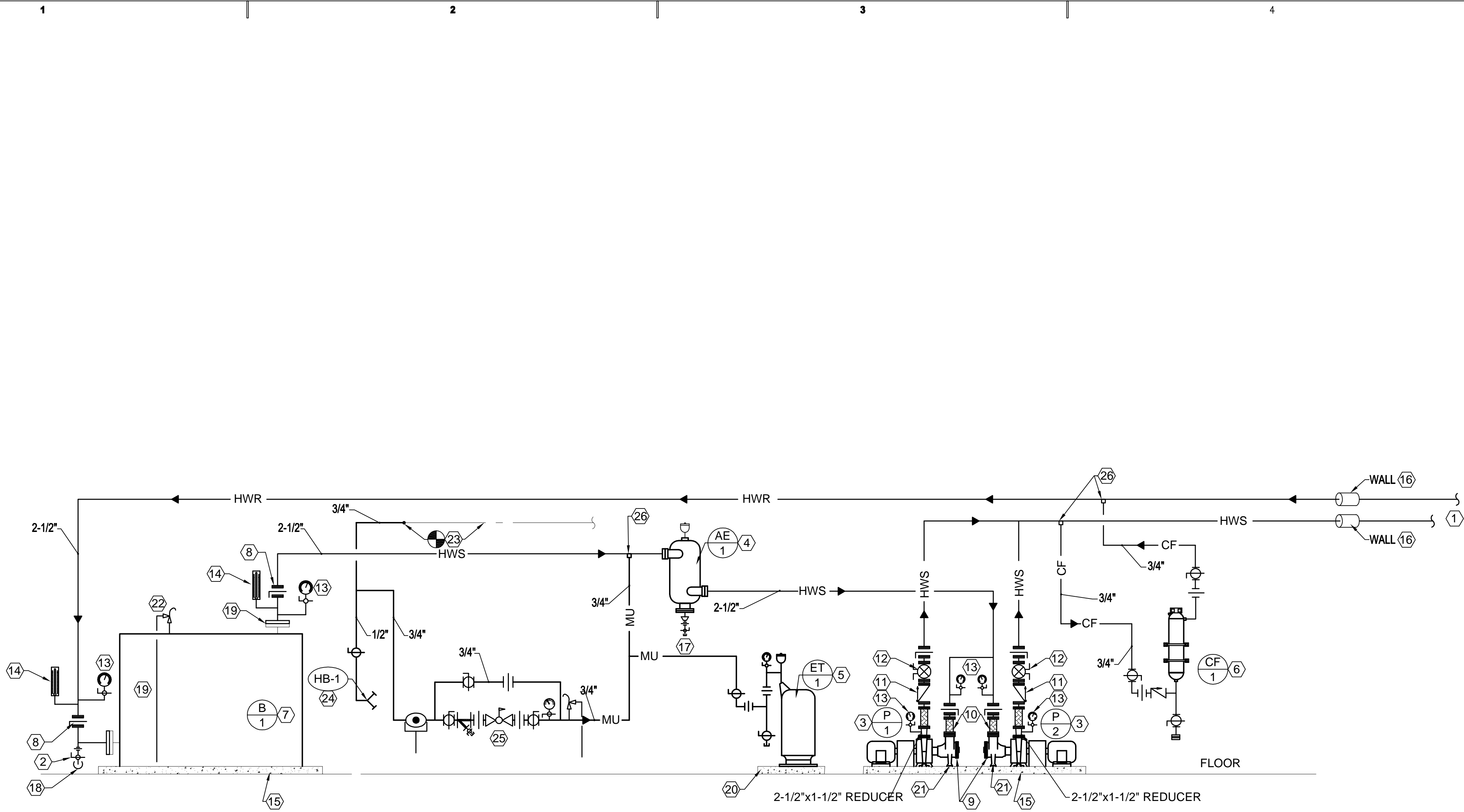
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STATE OF UTAH

MECHANICAL SCHEDULES

SHEET NO.

ME602

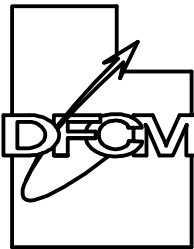


NEW HOT WATER FLOW SHEET  
NO SCALE

SHEET NOTES:

- 1 NEW 2-1/2" HWS AND HWR TO NEW VAV BOXES IN BUILDING.
- 2 BALL VALVE.
- 3 NEW BASE MOUNTED END SUCTION HOT WATER PUMPS.
- 4 NEW AIR ELIMINATOR. SEE DETAIL.
- 5 NEW FLOOR MOUNTED EXPANSION TANK. SEE DETAIL.
- 6 CHEMICAL POT FEEDER. INSTALL PER DETAIL, AND WATER TREATMENT CONTRACTOR'S RECOMMENDATIONS.
- 7 PROVIDE NEW BOILER. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
- 8 FLANGED BUTTERFLY VALVE.
- 9 2-1/2"x2" PUMP SUCTION DIFFUSER WITH FLOOR SUPPORT.
- 10 2-1/2" FLEX PUMP CONNECTORS. TYPICAL OF 4.
- 11 2-1/2" WAFER TYPE CHECK VALVE. TYPICAL OF 2.
- 12 2-1/2" BALANCING VALVE. TYPICAL OF 2.
- 13 PRESSURE GAUGE WITH SNUBBER AND SHUT OFF VALVE 0 TO 150 PSIG.
- 14 THERMOMETERS 0° TO 250° F.
- 15 PROVIDE NEW 4" HIGH CONCRETE PAD. SEE DETAIL.
- 16 PROVIDE NEW WALL OPENINGS WITH WALL SLEEVES FOR THE NEW PIPING.
- 17 1" DRAIN FROM AIR ELIMINATOR. COMPLETE WITH COMBRACO SHUT OFF WITH HOSE CONNECTION AND CAP.
- 18 DRAIN PIPING BEHIND BOILER
- 19 CONNECT PIPING TO BOILER PER MANUFACTURER'S RECOMMENDATIONS.
- 20 MOUNT EXPANSION TANK ON EXISTING CONCRETE PAD. SEE ME401.
- 21 FLOOR SUPPORTS.
- 22 PROVIDE BOILER SAFETY RELIEF VALVE. ROUTE DISCHARGE PIPING TO FLOOR SO IT ONLY CONTAINS ONE 90° ELBOW.
- 23 PROVIDE 3/4" MAKE UP WATER LINE, TIE INTO EXISTING WATER PIPING. FIELD VERIFY EXACT SIZE AND LOCATION.
- 24 1/2" HOSE BIBB WITH SCREW-ON VACUUM BREAKER. MOUNT ON WALL.
- 25 PRV STATION FOR MAKE-UP WATER TO HOT WATER SYSTEM. SEE DETAIL.
- 26 3/4" THRED-O-LET.

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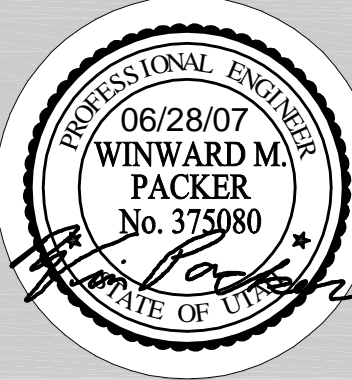
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SHEET TITLE

**MECHANICAL FLOW SHEET**

SHEET NO.

**ME701**

#### GENERAL NOTES:

- 1 ALL MATERIALS TO BE REMOVED AND RETURNED TO THE OWNER, MATERIALS WHICH THE OWNER DECIDES NOT TO KEEP SHALL BE SALVAGED AND REMOVED FROM THE SITE BY THE CONTRACTOR.
- 2 ALL CONCEALED CONDUIT THAT CANNOT BE REMOVED SHALL BE CUT FLUSH WITH THE FINISH SURFACES AND CAPPED OFF AFTER THE WIRING HAS BEEN DISCONNECTED AT THE PANEL AND REMOVED FROM THE CONDUIT.
- 3 IN AREAS WHERE CIRCUIT CONTINUITY IS INTERRUPTED, BUT MUST BE MAINTAINED TO THE DEVICES WHICH ARE TO REMAIN, MAKE ALL THE NECESSARY MODIFICATIONS TO THE CIRCUITS IN ORDER TO MAINTAIN THE CIRCUIT INTEGRITY.
- 4 THE CONTRACTOR SHALL PATCH THE WALLS AND CEILINGS WHERE THE DEVICES ARE REMOVED TO MATCH THE EXISTING WALLS AND CEILINGS. COORDINATE WITH GENERAL CONTRACTOR.
- 5 MINIMUM SIZE OF CONDUIT TO BE 3/4". ALUMINUM CONDUITS SHALL NOT BE USED.
- 6 USE RIGID STEEL SET SCREW TYPE FITTINGS ONLY. DIE CAST FITTINGS SHALL NOT BE USED.
- 7 REFER TO THE MECHANICAL SHEETS FOR THE EXACT LOCATION OF THE MECHANICAL EQUIPMENT.
- 8 ALL NEW WORK MUST MEET THE CURRENT ADOPTED NATIONAL ELECTRICAL CODE.
- 9 NOT MORE THAN THREE (3) CIRCUITS SHALL BE INSTALLED IN A CONDUIT. EACH CIRCUIT SHALL CONSIST OF 1 CONDUCTOR FOR EACH PHASE, 1 NEUTRAL, AND 1 GROUND, FOR A TOTAL OF FIVE CONDUCTORS.
- 10 THE MINIMUM SIZE OF THE CONDUCTORS ARE TO BE #12 AWG THHN COPPER, UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
- 11 ALL CONDUITS EXPOSED TO THE WEATHER AND IN THE BOILER ROOM SHALL BE GALVANIZED RIGID STEEL, UNLESS OTHERWISE NOTED.
- 12 ALL NEW EXPOSED CONDUIT MUST RUN AGAINST THE WALLS OR CEILINGS. DO NOT PENDANT MOUNT ANY CONDUIT FROM THE CEILINGS.
- 13 ALL THE HOT RUNS MUST BE ACCESSIBLE IN THE CEILING PLENUM. DO NOT CARRY A HOT RUN FROM ONE DEVICE TO ANOTHER WHICH IS TIED TO A SEPARATE HOT RUN INSIDE THE WALL. MARK ON ALL THE J-BOXES THE CIRCUIT NAMES AND NUMBERS.
- 14 AT THE END OF THE JOB, PROVIDE BLANK COVER PLATES TO MATCH THE OTHER COVER PLATES FOR ALL J-BOXES WHERE DEVICES HAVE NOT YET BEEN INSTALLED.
- 15 SEAL AROUND ALL CONDUIT PENETRATIONS THROUGH FIRE RATED WALLS AND CEILINGS WITH FIRE RATED MATERIAL. 3M IS AN APPROVED MANUFACTURER.
- 16 ALL DISCONNECTS, J-BOXES AND CONDUITS EXPOSED TO THE OUTSIDE WEATHER SHALL BE NON-CORROSIVE, WEATHER PROOF TYPE.
- 17 ALL DISCONNECTS SHALL BE HEAVY DUTY TYPE.
- 18 ALL MATERIALS USED IN THIS INSTALLATION SHALL BE UL APPROVED AND NEW.
- 19 ALL ELECTRICAL WIRING MUST BE IN CONDUIT (ROMEX AND MC CABLE NOT PERMITTED).
- 20 FLEXIBLE CONDUITS CAN ONLY BE USED FOR SHORT RUNS (6' MAXIMUM).
- 21 NO CONDUITS SHALL RUN IN DUCT WORK.
- 22 PRIOR TO SUBMITTING A BID THE ELECTRICAL CONTRACTOR SHALL INSPECT THE SITE AND INCLUDE IN HIS BID PACKAGE ALL CHARGES DUE TO EXISTING CONDITIONS. SHOP DRAWINGS ARE REQUIRED. ALL LABOR, MATERIAL AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF 1 YEAR FROM THE DATE OF ACCEPTANCE BY THE TENANT UNLESS INDICATED OTHERWISE. REPLACE OR REPAIR ALL DEFECTS DURING THE GUARANTEED PERIOD.
- 23 ALL DUPLEX OUTLETS AND SWITCHES SHALL BE 20 AMP, 120 VOLT SPEC GRADE, HUBBELL AND PASS 4 SETHROW AND LEVITON ARE APPROVED MANUFACTURERS.
- 24 THE ELECTRICAL CONTRACTOR SHALL NOTIFY AND COORDINATE WITH THE MECHANICAL CONTRACTOR SO THAT NO PIPING, DUCTS, OR OTHER EQUIPMENT SHALL BE INSTALLED IN ENTRY OR PASS THROUGH ELECTRICAL ROOM OR SPACES ABOVE OR BELOW ELECTRICAL PANELS.
- 25 ELECTRICAL CONTRACTOR SHALL VERIFY ALL ELECTRICAL LOADS (VOLTAGE, PHASE, CONNECTION REQUIREMENT, ETC) OF EQUIPMENT FURNISHED UNDER OTHER DIVISIONS WITH APPROVED SHOP DRAWINGS PRIOR TO BEGINNING ROUGH-IN.
- 26 THE CONTRACTOR SHALL INFORM THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES FOUND BETWEEN THE INTENDED FUNCTION OF EQUIPMENT AND EQUIPMENT SPECIFIED IN THE CONTRACT DOCUMENTS A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO ISSUANCE OF THE FINAL BID. FAILURE TO REPORT ANY DISCREPANCY (CATALOG NUMBERS, DISCONTINUED ITEMS, ETC) DOES NOT RELIEVE THE CONTRACTOR FROM PROVIDING EQUIPMENT WHICH SHALL CONFORM TO AND FULFILL THE INTENT OF THE CONTRACT DOCUMENTS. NOR SHALL IT BE USED AS A CONDITION TO OBTAIN ADDITIONAL FUNDS FROM THE OWNER AFTER THE CONTRACT IS AWARDED. THE CONTRACTOR SHALL REQUEST ALL CLARIFICATIONS OF CONTRACT DOCUMENT REQUIREMENTS IN WRITING TO THE ARCHITECT/ENGINEER A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO ISSUANCE OF THE FINAL ADDENDUM.
- 27 PROVIDE TYPED LABEL FOR ALL DUPLEX OUTLETS TO INDICATE WHICH CIRCUIT THEY ARE TIED TO.
- 28 CONTRACT DOCUMENTS SHALL TAKE PRECEDENCE OVER SHOP DRAWINGS UNLESS SPECIFICALLY NOTED OTHERWISE.

This schematic diagram illustrates the standard wiring for a 3-wire 24VDC sensor. The power source is a 24VDC supply, with the positive terminal connected to the 'Red' wire of the sensor. The negative terminal is connected to the 'Common' wire. The 'Control Output' wire is connected to the 'Blk' (black) wire. The 'Any 3-Wire 24VDC Sensor' is represented by a box with three terminals: 'Red', 'Common', and '+24VDC'. The 'Red' wire is connected to the 'Local Off Switch' and then to the 'Load'. The 'Blk' wire is connected to the 'Neutral' line. The 'Wht' (white) wire is connected to the 'Hot' line. The 'Power Pack' is connected to the 'Red' and 'Blk' wires. The 'Load' is connected to the 'Red' wire and the 'Local Off Switch'.

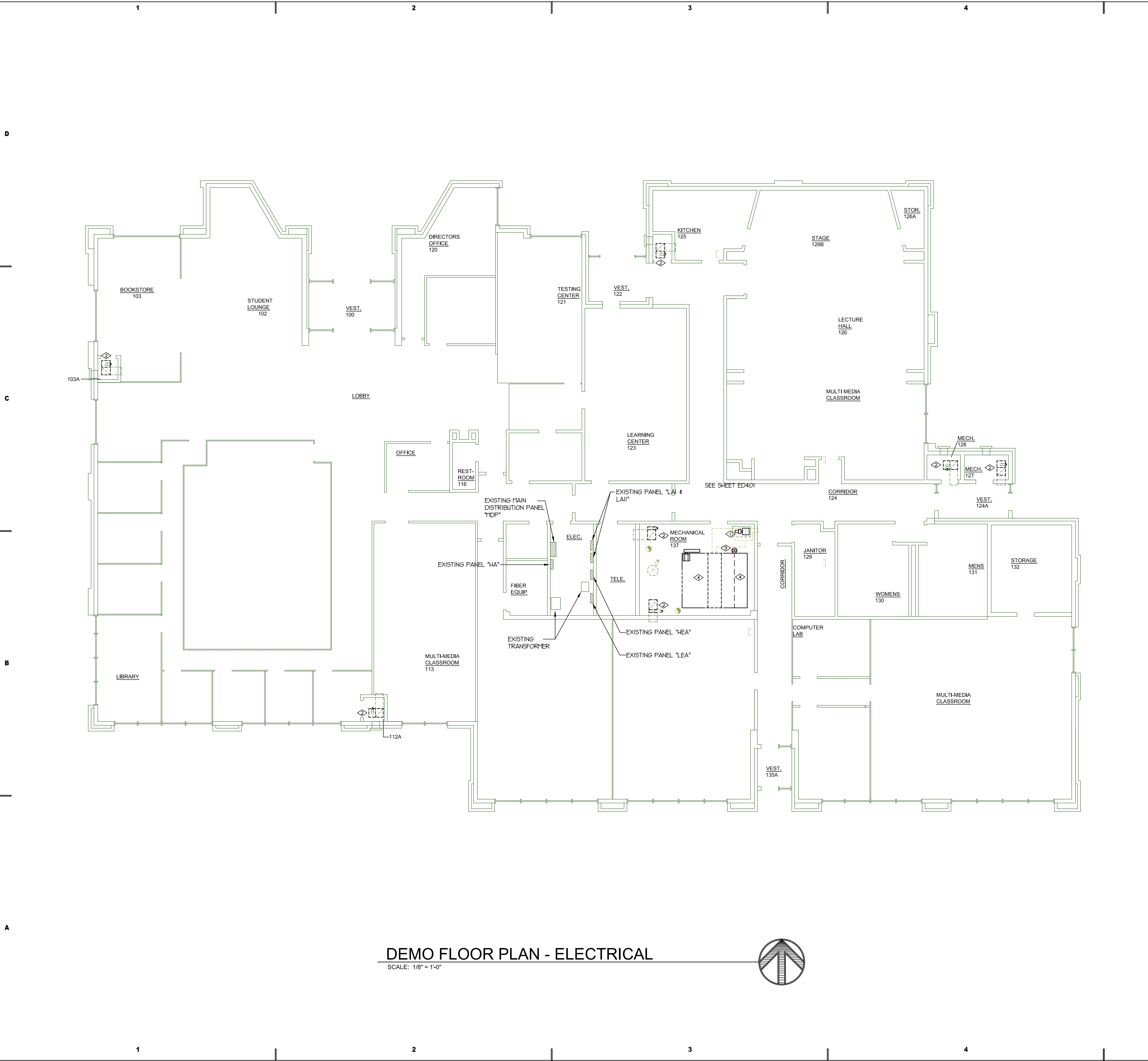
### Any 3-Wire 24VDC Sensor Standard Schematic

### WIRING DIAGRAM FOR ROOM WITH ONE SENSOR AND ONE POWER PACK

SCALE: NTS

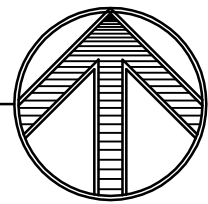
## SHEET NO.

# E001



DEMO FLOOR PLAN - ELECTRICAL

SCALE: 1/8" = 1'-0"



REFERENCE NOTES:

- EXISTING PUMP WILL BE REMOVED BY MECHANICAL CONTRACTOR. REMOVE ASSOCIATED CONDUIT, CONDUCTORS, J-BOXES, DISCONNECTS, ETC. REMOVE CONDUIT AND CONDUCTORS ALL THE WAY BACK TO PANELBOARD. FIELD VERIFY. COORDINATE WITH MECHANICAL CONTRACTOR.
- EXISTING FURNACES ARE BEING REMOVED BY MECHANICAL CONTRACTOR. REMOVE ASSOCIATED CONDUIT, CONDUCTORS, J-BOXES, ETC. ALL THE WAY BACK TO PANELBOARDS. FIELD VERIFY. COORDINATE WITH MECHANICAL CONTRACTORS.
- REMOVE EXISTING DUCT SMOKE DETECTOR FROM EXISTING AIR HANDLER UNIT AND UTILIZE FOR THE NEW ROOF TOP UNIT AS POSSIBLE. REMOVE ASSOCIATED CONDUIT, CONDUCTORS, ETC.
- EXISTING AIR HANDLING UNIT IS REMOVED BY MECHANICAL CONTRACTOR. REMOVE ASSOCIATED CONDUIT, CONDUCTORS, J-BOXES, DISCONNECT, ETC. ALL THE WAY BACK TO THEIR ORIGIN POINTS. FIELD VERIFY. COORDINATE THIS WORK WITH MECHANICAL CONTRACTOR.

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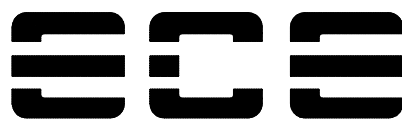
Division of Facilities  
Construction & Management  
4110 State Office Building  
Salt Lake City, Utah 84114  
Phone: (801) 538 - 3018  
Fax: (801) 538 - 3267

Internet: <http://www.dfcm.state.ut.us>

CONSULTANTS



**WHW**  
ENGINEERING INC.  
PROFESSIONAL MECHANICAL ENGINEERING  
1354 East 3300 South Suite 200  
SALT LAKE CITY, UTAH 84108  
(801) 468-4021 FAX 468-8336  
EMAIL: [excellence@whw-engineering.com](mailto:excellence@whw-engineering.com)



E.C.E. INC.  
939 So. West Temple  
Salt Lake City, Utah 84101  
Telephone (801) 521-8007  
Telefax (801) 521-8057

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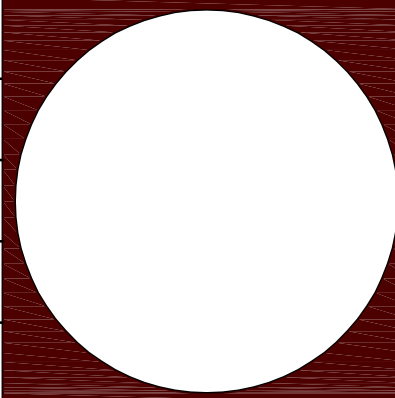
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Layton, Utah

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**DEMO ELECTRICAL FLOOR  
PLAN**

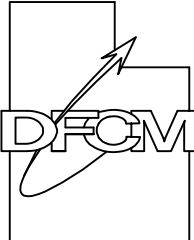
SHEET NO.  
**ED101**



REFERENCE NOTES:

◇ EXISTING MECHANICAL EQUIPMENT REMOVED BY OTHERS AFTER POWER HAS BEEN DISCONNECTED. REMOVE ASSOCIATED DISCONNECT SWITCH, CONDUIT AND CONDUCTORS ALL THE WAY BACK TO ORIGINATION POINT. IDENTIFY AND TAD AS SPARE CIRCUIT BREAKER.

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Construction & Management  
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Salt Lake City, Utah 84114  
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CONSULTANTS



**WHE**  
**ENGINEERING INC.**  
PROFESSIONAL MECHANICAL ENGINEERING  
1354 East 3300 South Suite 200  
SALT LAKE CITY, UTAH 84106  
(801) 468-4021, FAX 468-8536  
EMAIL: [excellence@whe-engineering.com](mailto:excellence@whe-engineering.com)



E.C.E. INC.  
939 So. West Temple  
Salt Lake City, Utah 84101  
Telephone (801) 521-8007  
Telefax (801) 521-8057

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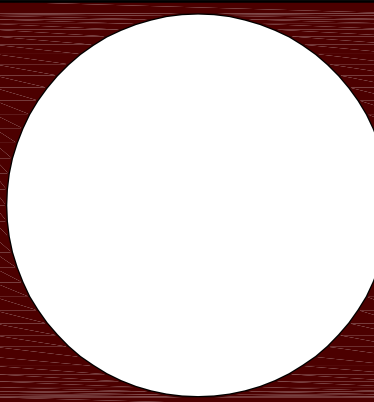
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**DEMO ELECTRICAL ROOF  
PLAN**

SHEET NO.  
**ED102**



REFERENCE NOTES:

- FURNISH AND INSTALL A 480 VOLT, 175 AMP, 3 POLE AND TWO (2) 20 AMP, 3-POLE CIRCUIT BREAKERS IN EXISTING MAIN DISTRIBUTION PANEL "MDP" TO FEED NEW ROOF TOP UNIT AND PUMPS. NEW CIRCUIT BREAKERS TO HAVE THE SAME AIC RATING AS EXISTING CIRCUIT BREAKERS. PROVIDE ALL THE HARDWARE REQUIRED FOR A COMPLETE INSTALLATION. FIELD VERIFY PRIOR TO BID.
- FURNISH AND INSTALL A DUAL TECHNOLOGY MOTION SENSOR AND POWER PACK, WATT STOPPER CAT# DT300/B2TIE-P IN THE APPROXIMATE LOCATION SHOWN TO CONTROL THE LIGHTS IN THE EXISTING ROOM. TIE THE MOTION SENSOR TO POWER PACK AND EXISTING LIGHT FIXTURES. REFER TO SCHEMATIC WIRING DIAGRAM. EXISTING LIGHT SWITCHES TO REMAIN AND SHALL BE TIED TO THE NEW POWER PACK. COORDINATE WITH WALL STOPPER FOR EXACT LOCATION OF MOTION SENSORS.
- RUN 3/12 THIN, 1/12 GROUND IN A 3/4" CONDUIT FROM NEW PUMP TO NEW 20 AMP 3 POLE CIRCUIT BREAKER IN EXISTING MAIN DISTRIBUTION PANEL "MDP". THROUGH VARIABLE FREQUENCY DRIVE. COORDINATE THIS WORK WITH MECHANICAL CONTRACTOR.
- RUN 2/12 THIN, 1/12 GROUND IN A 3/4" CONDUIT FROM BOILER TO 20 AMP, 1 POLE SPARE CIRCUIT BREAKER IN EXISTING PANEL "LAI". COORDINATE WITH MECHANICAL CONTRACTOR.
- TIE NEW POWER PACK TO EXISTING LIGHT FIXTURES THROUGH EXISTING LIGHT SWITCHES. PROVIDE CONDUIT AND CONDUCTORS FOR A COMPLETE INSTALLATION.
- PROVIDE 120 VOLT CONTROL POWER TO BOILER.
- REMOVE FOUR, 20 AMP, 1 POLE SPARE CIRCUIT BREAKERS FROM EXISTING PANEL "LAI" AND REPLACE WITH TWO (2) NEW 208 VOLT, 20 AMP, 2 POLE CIRCUIT BREAKERS IN EXISTING PANEL "LAI" TO FEED NEW SPLIT INDOOR UNIT FC-1 AND OUTDOOR UNIT CU-1.
- RUN 2/12 THIN, 1/12 GROUND IN A 3/4" CONDUIT FROM SPLIT INDOOR UNIT (FC-1) TO NEW 20 AMP, 2 POLE CIRCUIT BREAKER IN EXISTING PANEL "LAI".
- FURNISH AND INSTALL A ULTRA SONIC MOTION SENSOR WITH REMOTE POWER PACK TO CONTROL THE LIGHT FIXTURE IN THE CORRIDORS THROUGH EXISTING LIGHT SWITCHES, WATT STOPPER CAT# WT2250/B2TIE-P. REFER TO MANUFACTURER WIRING DIAGRAM FOR MORE INFORMATION. COORDINATE WITH WATT STOPPER FOR EXACT LOCATION OF MOTION SENSORS.
- FURNISH AND INSTALL A MOTION SENSOR WITH INTEGRAL POWER PACK IN THE APPROXIMATE LOCATION SHOWN. TIE EXISTING LIGHT FIXTURES IN THE ROOM TO THE MOTION SENSOR THROUGH EXISTING LIGHT SWITCH. WATT STOPPER CAT# UT355-2. REFER TO MANUFACTURER WIRING DIAGRAM FOR MORE INFORMATION. COORDINATE WITH WATT STOPPER FOR EXACT LOCATION OF THE SENSOR.

SPECIAL NOTES:

- CONTRACTOR MUST PROVIDE NEW TYPED IDENTIFICATION CARDS FOR ALL PANELBOARD WHICH WORK IS BEING DONE UNDER THIS CONTRACT. PROVIDE A COPY OF THESE TO THE ENGINEER.
- ALL CEILING MOUNTED MOTION SENSORS ARE TO BE INSTALLED AT LEAST 6 FOOT AWAY FROM SUPPLY AIR DIFFUSERS.
- CONTRACTOR MUST ASSIST OWNER TO SET ALL MOTION SENSORS AT PROPER SETTING AS DIRECTED BY OWNER.

ALTERNATE #1:

UNDER ALTERNATE #1 CONTRACTOR IS TO INCLUDE ALL ELECTRICAL WORK REQUIRED FOR INSTALLATION OF MOTION SENSORS, POWER PACKS, ASSOCIATED CONDUIT, CONDUCTORS, ETC. THIS COST SHOULD INCLUDE MATERIAL AND LABEL FOR A COMPLETE INSTALLATION.

CONSULTANTS



**WHW**  
ENGINEERING INC.  
PROFESSIONAL MECHANICAL ENGINEERING  
1354 East 3300 South Suite 200  
SALT LAKE CITY, UTAH 84106  
(801) 468-4021 FAX 468-8536  
EMAIL: [excellence@whw-engineering.com](mailto:excellence@whw-engineering.com)



**E.C.E. INC.**  
939 So. West Temple  
Salt Lake City, Utah 84101  
Telephone (801) 521-8007  
Telefax (801) 521-8057

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**NEW ELECTRICAL FLOOR  
PLAN**

SHEET NO.

**E101**



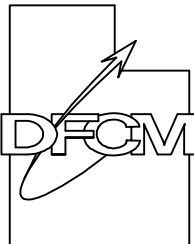
REFERENCE NOTES:

- ◇ FURNISH AND INSTALL A DUCT SMOKE DETECTOR WITH SAMPLING TUBE IN THE RETURN AIR DUCT OF THE NEW ROOF TOP UNIT. TIE THE DETECTOR IN CLASS "A" TO EXISTING FIRE ALARM CONTROL PANEL. PROVIDE CONDUIT, CONDUCTORS, J-BOXES, ETC. FOR A COMPLETE INSTALLATION. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION.
- ◇ VARIABLE FREQUENCY DRIVES AND SITE DISCONNECT IS FURNISHED WITH ROOF TOP UNIT. TIE THE NEW ROOF TOP UNIT TO THE NEW 175 AMP, 3-POLE CIRCUIT BREAKER IN THE EXISTING MDP. PROVIDE CONDUIT AND CONDUCTORS FOR A COMPLETE INSTALLATION.
- ◇ NEW OUTLET IS FURNISHED WITH NEW ROOF TOP UNIT. TIE THE NEW OUTLET TO A 20 AMP, 1-POLE SPARE CIRCUIT BREAKER IN PANEL "ALI". UTILIZE 2#12, #12 GREEN GROUND IN 3/4" CONDUIT. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION OF THE OUTLET.
- ◇ RUN 2#12 THIN, #12 GROUND IN A 3/4" CONDUIT FROM NEW SPLIT OUTDOOR UNIT (OU-V) TO A NEW 20 AMP 2 POLE CIRCUIT BREAKER IN EXISTING PANEL "LAI". COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION.
- ◇ TIE NEW ROOF TOP UNIT TO FIRE ALARM CONTROL PANEL FOR AUTOMATIC FAN SHUT DOWN. PROVIDE CONDUIT, CONDUCTORS, RELAY, ETC. FOR A COMPLETE INSTALLATION.

SPECIAL NOTES:


- I. ALL FLASHING FOR CONDUIT PENETRATIONS THROUGH THE ROOF MUST BE DONE BY ROOFING CONTRACTOR AND WARRENTIED FOR LIFE OF THE ROOF.

**State of Utah**  
Department of Administrative Services

 **Division of Facilities**  
Construction & Management  
4110 State Office Building  
Salt Lake City, Utah 84114  
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 **WHW**  
**ENGINEERING INC.**  
PROFESSIONAL MECHANICAL ENGINEERING  
1354 East 3300 South Suite 200  
SALT LAKE CITY, UTAH 84106  
(801) 466-4021, FAX 466-8536  
EMAIL: [excellence@whwengineering.com](mailto:excellence@whwengineering.com)



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939 So. West Temple  
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**ELECTRICAL ROOF PLAN**

SHEET NO.

**E102**